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Notes on Potentilla.—VI.

By P. A. Rydberg.

(Plates 287, 288.)

The *Hippianae* constitute a group somewhat related to the *Multijugae*. They are, however, as a rule stouter than the members of that group, and the leaves are more or less white or grayish hairy, generally densely silky, villous or tomentose. The group contains the following species:

Potentilla Breweri S. Wats. Proc. Am. Acad. 7: 555. 1873.

Potentilla Breweri much resembles *P. Plattensis*. It has the large stipules characteristic of that species and also essentially the the same flowers. The leaflets are, however, broader and less divided and densely silky-villous. In the typical form the cyme is rather dense and the flowers larger. It grows in California.

Potentilla Breweri expansa S. Wats. Bot. Cal. 1: 179. 1876.

Potentilla Plattensis leucophylla Greene, Erythea, 1: 4. 1893.

This resembles *P. Plattensis* still more, having the open cyme of that species. It grows also in Nevada and is apparently more common than the species.

Potentilla crinita A. Gray, Mem. Am. Acad. 1849: 41. 1849.

This is of similar habit but easily distinguished by its conduplicate, appressed-silky cuneate leaflets, which are slightly crenate at the apex. *P. crinita* grows on the dry plains of Arizona, New Mexico, southern Utah and Colorado.

POTENTILLA EFFUSA Dougl.; Lehm. Stirp. Pug. 2: 8. 1830.

The pubescence is grayish or whitish tomentose, not at all silky; the branches are rather divergent and the bractlets much smaller than the acuminate sepals. It grows on the dry plains from New Mexico to Montana, Assiniboia and Minnesota (?).

Potentilla effusa gossypina Nutt.; Torr & Gray, Fl. N. Am. 1: 437. 1840, is still unknown. Dr. Hooker, in London Jour. Bot. 6: 219, states that the plant collected by Geyer (no. 637) was labelled by Nuttall *P. gossypina*. These specimens Dr. Hooker identified as *P. arachnoidea* Douglas, which is *P. Pennsylvanica arachnoidea* Lehm.

POTENTILLA FILICAULIS (Nutt.).

Potentilla effusa filicaulis Nutt.; Torr. & Gray, Fl. N. Am. 1: 437. 1840.

This is known from only two fragmentary specimens, one, the original of Nuttall, in the Torrey Herbarium at Columbia University, the other collected by Dr. J. M. Coulter, in 1872, near Fort Hale, and preserved in Dr. Porter's private collection. The stem is very slender, filiform. As the pubescence is somewhat silky, it is probably more related to the following species:*

POTENTILLA HIPPIANA Lehm. Stirp. Pug. 2: 7. 1830.

Potentilla leucophylla Torr. Ann. Lyc. Nat. Hist. N. Y. 2: 197. 1827. Not Pallas.

Potentilla leneophylla Eat. Man. Ed. 5, 344. 1829.

The name used by Eaton seems to have been overlooked altogether. It may be claimed that the name given was only a misprint for *P. leucophylla*, the original name, which, however, is antedated by *P. leucophylla* Pallas, a synonym of *P. nivea*. The name *P. leneophylla*, which means woolly-leaved, a very appropriate name, is not only found in the fifth edition of Eaton's Manual, but also in the sixth and seventh editions and in Eaton & Wright's North

* Since the above was written I have found a sheet of good specimens in a colt lection from the Iowa Agricultural College at Ames. These specimens show tha- the plant is more nearly related to *P. Hippiana* than to *P. effusa*, having practically the same pubescence and sepals as that species, but is much smaller. It has often subdigitate leaves, and holds about the same relation to *P. Hippiana* as *P. saximontana* and *P. minutifolia* do to *P. pulcherrima*, and may better be referred to the *Subjugae* group.

American Botany. Watson in his Bibliographical Index has no reference to any of the editions of Eaton's Manual and gives Eaton & Wright as a reference under *P. leucophylla*, which does not appear there. The Kew Index has also omitted *P. leneophylla*, which should take the place of *P. Hippiana*, being a year older, if it were not for the fact that it very likely is to be explained as a misprint. *P. Hippiana* is sometimes very hard to distinguish from *P. effusa*, and the two seem to grade into each other. *P. Hippiana* is, however, as a rule larger, silky as well as tomentose; the branches are more erect and the bractlets nearly equalling the acute sepals. The species grows on the plains and the foot hills of the Rockies, but generally in richer soil than *P. effusa*. It extends from New Mexico and Arizona to Minnesota and Saskatchewan.

POTENTILLA HIPPIANA PROPINQUA n. n.

Potentilla diffusa A. Gray, Mem. Am. Acad. 1849: 41. 1849. Not Willd.

Potentilla Hippiana pulcherrima S. Wats. Proc. Am. Acad. 555, in part, 1873. Not *P. pulcherrima* Lehm.

The stem is more diffuse or ascending, rather low; the leaflets are more approximate and more silky, scarcely at all tomentose, often green above. In the latter case they resemble somewhat those of *P. pulcherrima*, which is a much taller plant.

POTENTILLA AMBIGENS Greene, Erythea, 1: 4. 1893.

It is strange that this very marked species should not have been described before 1893. It was collected by Hall and Harbour in 1862, Wm. A. Bell in 1867 and Geo. Vasey in 1881. The first specimens were included by Dr. Gray in *P. Hippiana*. On the label of Bell's specimens is written: "Durand suggests *P. rivularis*. Gray says no!—perhaps *P. campestris*." One of Dr. Vasey's specimens is labeled *Potentilla Thurberi*, by whom I do not know.

P. ambigens is the tallest of the group, 6–7 dm. high, rather sparingly grayish silky. The leaflets are 3–4 cm. long, coarsely serrate and more or less decurrent on the rachis. The following specimens have been examined:

Colorado: Hall & Harbour, nos. 158 and 162, 1862 (both only in part); E. L. Greene.

New Mexico: Wm. A. Bell (Ratan Mountains), 1867; G. R. Vasey (Las Vegas), 1867.

POTENTILLA LEMMONI (Wats.) Greene, Pittonia, 1: 104, 1887.

Ivesia Lemmoni Wats. Proc. Am. Acad. 20: 365. 1885.

This species should, I think, be placed as an appendix to this group. It has no relationship to any of the Ivesias, and is a true Potentilla in every respect, except as to the number of pistils, which are only half a dozen or so. Its nearest relative is, without doubt, *Potentilla crinita*, from which it differs by the longer, narrower and fewer leaflets, the sparser pubescence, the few pistils and the longer hairs on the receptacle.

Graciles. This group is the most difficult in the whole genus. It contains so many and perplexing forms, that I have not yet come to any definite conclusion as to how to treat it. Watson united all except the first (partly) and the last into one species. This is far from satisfactory. It would have been much more logical to make *P. effusa* a variety of *P. Hippiana*, *P. Breweri* one of *P. Plattensis*, or *P. emarginata* one of *P. fragiformis* than to include *P. Nuttallii* and *P. flabelliformis* in *P. gracilis*. The group contains not less than ten well marked American forms and about half a dozen less marked ones. Of these ten forms all except one have been recognized at one time or another as species or varieties, and as far as I know, all but two have received names. I shall temporarily regard these ten as species.

This view I dare to express, as I have had chance to study this group especially in the field. I have collected the following myself: *P. pulcherrima*, *Blaschkeana*, *flabelliformis*, var. *ctenophora*, *fastigiata*, *etomentosa and Nuttallii*. I have seen the following growing together: *pulcherrima* and *Nuttallii*, *Blaschkeana* and *Nuttallii*, *Blaschkeana* and *flabelliformis*, *Blaschkeana* and *ctenophora*, *flabelliformis* and *Nuttallii*. In no case have I found intermediate forms. In the herbaria that I have looked over I have found one specimen between *Blaschkeana* and *ctenophora*, a few between *Nuttallii* and *Blaschkeana* or *fastigiata*, etc., but as a rule they can be distinguished fairly well.

POTENTILLA PULCHERRIMA Lehm. Stirp. Pug. 2: 10. 1830.

Potentilla Hippiana pulcherrima Wats. Proc. Am. Acad. 7: 555. (in part) 1873.

As originally described, *P. pulcherrima* Lehm. has pinnate leaves with approximate leaflets. This was undoubtedly the reason why Watson united it with *P. diffusa* Gray. As far as I know, that plant is low, ascending, and rather silky and in all respects nearest related to *P. Hippiana* (see above), while *P. pulcherrima* is tall, upright, with slender erect branches and nearest related to *P. gracilis* and *P. fastigiata*. Watson, during King's expedition, observed the fact that *P. pulcherrima* had not always pinnate leaves, which, in fact, is rather seldom the case, and consequently included in *P. Hippiana pulcherrima* also a form with digitate leaves. The only character left to distinguish forms of *P. Hippiana* and those of *P. gracilis* was the number of carpels, in the former 10–30, in the latter 40. Unfortunately the number varies even in the same individual, and therefore many specimens labelled *P. gracilis* belong to *P. pulcherrima*. My own from the Black Hills, I unfortunately labeled thus. *P. pulcherrima* differs from the other members of the group by its leaflets, which are obovate or oblanceolate, mostly obtuse, crenate, silky and green above, densely white-tomentose beneath. It grows in the mountains and foot hills from New Mexico and Nevada to Saskatchewan. No specimens have been seen from the Pacific Slope.

POTENTILLLA GRACILIS Dougl.; Hook. Bot. Mag. *pl. 2984.* 1829.

The true *P. gracilis* is a very rare plant and confined to the northern Pacific Coast. What has gone under this name is either the preceding or the next following species. It differs from both in the narrow leaflets, which are oblanceolate, acute, and coarsely toothed with triangular teeth of the same form as in *P. recta*. The leaves are only slightly silky above and finely tomentose beneath, and the branches of the cyme are very slender and erect. The following specimens have been examined:

Oregon: Douglas; Tolmie, 1851; E. Hall, no. 136, 1871. *Washington:* Dr. Ruhn; Wilke's Expedition, no. 141. *Vancouver Island:* John Macoun, no. 182, 1893. *Kodiak Island:* (Collector not given).

POTENTILLA BLASCHKEANA Turcz; Lehm. in Otto, Gart. & Blumenz. 9: 506. 1853.

Potentilla gracilis most authors, not Dougl.

This differs from *P. gracilis* in stouter habit, ascending branches, larger flowers and broader leaflets, which are obovate, deeply toothed or cleft into ovate or oblong teeth, silky and green above, silky and tomentose beneath. It must be admitted that this species is near to the preceding. It was merged therein by Watson, but it is evidently not so near *P. gracilis* as is *P. pulcherrima*, which differ only in the form of the teeth.

P. Blaschkeana is common from California to Wyoming and northward as far as Kodiak, off Alaska.

POTENTILLA CANDIDA n. sp.

Potentilla gracilis var. Wats. King's Exp. 5: 88. 1871.

Stem low, 1–2 dm. high, densely white silky-strigose; stipules ovate, entire, nearly 1 cm. long; leaves on rather short petioles, densely silvery silky on both sides, digitate; leaflets 7–9, obovate in outline, 2–4 cm. long, rather thick, deeply incised or cleft into large oblong teeth; cyme rather dense; flowers about 1 cm. in diameter; calyx white-silky; bractlets lanceolate, much shorter than the ovate sepals; petals yellow, obcordate, a little exceeding the sepals. (Plate 287.)

It resembles most a depauperate *P. Blaschkeana*. and differs mainly in the pubescence which is very dense on bc . sides of the leaves, and silky; tomentum none.

Nevada: S. Watson, no. 337, 1868 (type). *Montana:* F. V. Hayden, 1860. *Wyoming:* T. C. Porter, 1873.

POTENTILLA FLABELLIFORMIS Lehm. Stirp. Pug. 2: 12. 1830.

Potentilla gracilis flabelliformis Nutt.; Torr & Gray, Fl. N. Am. 1: 440. 1840.

This stands nearest to *P. Blaschkeana*, but I think it is without doubt a good species. I have had the opportunity to watch the two in the field and found them often grow together, but never found an intermediate form, and in all the collections that have gone through my hands there are only the specimens from one locality, where I am in doubt to which species to refer them, and these may be hybrids. *P. flabelliformis* differs from the related species

in the leaves, which are divided to near the base into linear segments. They are also white-tomentose beneath and densely silky above. There are two forms of this species; the one with narrow linear more or less revolute lobes and smaller flowers resembles Lehmann's figure in Hooker's Fl. Bor. Am., and is therefore taken as the type. The other somewhat approaches *P. Blaschkeana* in the general habit and the size of the flowers, and may be known under the name:

POTENTILLA FLABELLIFORMIS CTENOPHORA n. v.

Stem stout; leaflets less deeply divided into somewhat broader divisions, which are not at all revolute. Corolla over 15 mm. in diameter, petals broadly obcordate, much longer than the sepals.

Both forms are fairly common from Wyoming and California to British Columbia and Saskatchewan.

POTENTILLA FASTIGIATA Nutt.; Torr. & Gray, Fl. N. Am. 1: 440. 1840.

Potentilla gracilis fastigiata Wats. Proc. Am. Acad. 7: 557. 1873.

This perhaps comes nearest to *P. pulcherrima*, resembling it in the form of the leaflets and the size of the flower, but it is a smaller plant, less than 3 dm. high and with a rather crowded cyme. The pubescence of the leaves is also different, long, silky and with very little tomentum beneath. It is a rather rare plant, extending from Wyoming and California to British Columbia and Saskatchewan.

POTENTILLA PECTINISECTA n. sp.

Stem slender, 3–4 dm. high, ascending, finely strigose or hirsute; stipules ovate, often toothed; leaves on slender petioles, digitate, of 5–8 leaflets, apressed-silky on both sides and sometimes slightly tomentulose beneath; leaflets obovate, deeply pectinately divided into oblong or linear segments; cyme rather dense; calyx appressed-silky; bractlets linear-lanceolate, shorter than the broadly lanceolate sepals; petals yellow, obcordate, scarcely exceeding the sepals.

It has gone under the names of *P. gracilis flabelliformis* and *fastigiata*. It resembles *P. fastigiata* in general habit and pubescence, but is more slender. The form of the leaflets is most like that of *P. Blaschkeana* and *P. Nuttallii*, and sometimes that of *P.*

flabelliformis, but the plant is more delicate and the pubescence is silky and rather scant. Specimens:

Arizona: E. Palmer, no. 145, 1877. *Wyoming:* C. E. Sheldon, no. 72, 1884; Fremont, 2d exp. *Montana:* Robert Adams, 1871. *Utah:* L. F. Ward, no. 119, 1875; M. E. Jones, no. 5554d and 35544, 1894; no. 765, 1880; Mrs. Thompson, no. 195, 1873.

POTENTILLA ETOMENTOSA n. sp.

Potentilla rigida Newberry, Pac. R. R. Rep. **6**: Part 3. 72. Not Nutt.

Potentilla gracilis rigida Coville, Cont. U. S. Nat. Herb. **4**: 96. 1893.

Stem 4–5 dm. high, slightly hairy, erect, from a stout caudex; stipules ovate, lanceolate, entire; leaves on long petioles, digitate, of about 7 leaflets, glabrate above, slightly silky-strigose beneath but without any trace of tomentum; leaflets obovate, 3–5 cm. long, crenate or serrate with ovate teeth; calyx hirsute; bractlets oblong, a little shorter than the ovate pointed sepals; petals obcordate, scarcely exceeding the sepals.

This resembles mostly *P. pulcherrima* but is perfectly without tomentum and only slightly hairy. It resembles *P. Nuttallii* only in the lack of tomentum. It has the crenate, obovate leaves of *P. pulcherrima*, and if not held distinct must be regarded as a variety thereof. The distribution is quite different, *P. pulcherrima* not having been collected in California. The following are the specimens seen:

California: Fremont, no. 162, 1846 (Type); J. S. Newberry (Williamson Expedition); Munson & Hopkins, 1889; Coville & Funston, no. 1399, 1891.

POTENTILLA NUTTALLII Lehm. Ind. Sem. Hort. Bot. Hamb. **1852**: 12. 1852.

Potentilla recta Nutt. Gen. **1**: 310. 1818. Not L.

Potentilla rigida Nutt. Journ. Acad. Phila. **7**: 20. 1834. Not Wall.

Potentilla gracilis rigida Wats. Proc. Am. Acad. **7**: 557. 1873.

The general habit of this species resembles that of *P. Blaschkeana*, but the plant is green, without tomentum and coarsely hirsute. The distribution is from Colorado to California, British Columbia and Saskatchewan.

POTENTILLA RECTA L. Sp. Pl. 497. 1753.

It somewhat resembles *P. Nuttallii* in pubescence and general habit, but differs in being paler and in its large pale yellow petals. It is of European origin and occurs sparingly in the Eastern States to the District of Columbia and to Ohio.

The *Argènteae* resemble in general habit the preceding group. The plants are very leafy, the leaflets generally 5 or those of the upper leaves only 3, the flowers many and small, and the petals scarcely exceed the sepals. The group is European, only *P. argentea* being also a native of North America.

POTENTILLA INTERMEDIA L. Mant. 1: 76. 1767.

This species very much resembles *P. Monspeliensis*, especially var. *Norvegica*, and has in this country been mistaken for it It differs mainly in the mostly 5-foliolate leaves, the perennial root and the style. The species is sparingly introduced in the East. Some of the specimens are:

New Jersey and *New York:* Addison Brown, 1881 and 1880.

POTENTILLA INCLINATA Vill. Hist. Pl. Delph. 3: 567. 1789.

P. canescens Besser, Prim. Fl. Galic. 1: 330. 1809.

It much resembles the preceding species, but differs in a more slender and simple stem and the grayish pubescence. The only specimens collected on this continent that I have seen are those collected in Ontario by Fowler.

POTENTILLA ARGENTEA L. Sp. Pl., 497. 1753.

P. argentea is one of the easiest to identify, by its small flowers, deeply dissected leaves, which are white-tomentose, especially beneath, and have revolute margins. It is a native of Europe and Asia, as well as of America. In this country it extends from Nova Scotia and the District of Columbia to Dakota and Kansas.

POTENTILLA COLLINA Wibel, Prim. Fl. Werth., 267. 1799.

This is another species that has been collected in the country at least once, viz., by J. M. Holzinger (no. 30) at Winona, Minn., in 1887. It differs from *P. argentea*, which it most resembles, by its prostrate or spreading habit, less white-tomentose leaves, which have broader lobes, and flat, not revolute margins.

The *Tormentillae* are a small group, characterized by the more or less spreading, prostrate or creeping stem and long-pedicelled, axillary flowers. The original *Tormentillae* have 4-merous flowers, but sometimes, however, they are 5-merous, and other species that have regularly 5-merous flowers have no other character which would warrant the division into two groups, much less into two genera. The group is mainly European, only one species being a native of North America, viz.:

POTENTILLA CANADENSIS L. Sp. Pl. 498. 1753.

It is a very variable plant, and several species have been proposed. What I take as the original *P. Canadensis* is a less luxuriant form of what has generally been known as *P. Canadensis simplex* (Michx.) T. & G. (*P. simplex* Michx.), not that small, simple, more hairy form, only a few inches high, that grows in poor dry soil, which is

POTENTILLA CANADENSIS PUMILA (Poir.) T. & G. Fl. N. Am. 1: 443. 1840.

Potentilla pumila Poir. in Lam. Enc. Meth. 5: 594. 1804.

P. Canadensis is common from Maine and North Carolina to Indian Territory and Minnesota. I have seen one specimen collected in Nevada, but this was undoubtedly introduced. The variety has about the same range, but is rarer.

POTENTILLA REPTANS L. Sp. Pl. 499. 1753.

This European species has been collected by Martindale in 1876 on ballast in New Jersey. It differs from *P. Canadensis* in the creeping and rooting stem, smaller leaves and large, ovate or elliptical bractlets, which exceed the sepals.

POTENTILLA NEMORALIS Nestler, Mon. Pot. 28 and 65. 1816.

Tormentilla reptans L. Sp. Pl. 500. 1753. Not *Potentilla reptans* L.

Also a European species which has been collected in Labrador. It differs from *P. Canadensis* in the 4-merous flowers and in the leaves, which are all, except the basal ones, ternate.

Haematochri. The dark purple- or dark red-flowered species of *Potentilla* constitute a very natural group, which consist of the

Mexican species: *P. Ehrenbergiana, Haematochrus, fusca*, and *comarioides*, a few Indian species, as for instance *P. Nepalensis* and *P. atrosanguinea*, and two species of the Southwestern United States, viz.:

POTENTILLA THURBERI A. Gray, Mem. Am. Acad. (II.) 5: 318. 1854.

As described by Gray and Lehmann, *P. Thurberi* should be perfectly green and only slightly hairy. Such specimens have been collected as follows:

New Mexico: Thurber, no. 1107, 1851; Dr. Henry, 1854; Dr. Bigelow (Mex. Bound. Surv.), no. 347, 1851; E. L. Greene, 1880; E. Palmer, 1869. *Arizona:* Lemmon, 1881; C. G. Pringle, 1884; Wooton, 1895.

More than half of the specimens in our collections that are labelled *P. Thurberi* do not agree with the original description, and I take them to represent an undescribed species:

POTENTILLA ATRORUBENS.

Potentilla Thurberi Rothrock, Wheeler Surv. 4: 113. (mainly.) 1878.

Stem 4–7 dm. high, finely pubescent and with scattered long villous spreading or reflexed hairs; stipules ovate or lanceolate, 1–2 cm. long, often toothed; basal and lower stem-leaves long-petioled, digitately 5–7-foliolate, glabrous or slightly silky above, silky and white-tomentose beneath; leaflets obovate to oblanceolate, coarsely serrate; stem-leaves sessile, 3–5-foliolate; cyme open and branched; flowers about 15 mm. in diameter; calyx silky-villous and finely pubescent, about 1 cm. in diameter; bractlets lanceolate, often equalling the lanceolate-triangular, more or less acuminate sepals; petals dark reddish purple, very broadly obcordate, exceeding the sepals; stamens 20. (Plate 288.)

This species much resembles *P. Thurberi*, from which it has not been distinguished. It differs, however, in several characters that seem to be fairly constant, viz., the tomentum on the lower surface of the leaves, the much sharper dentation, the long silky spreading or reflexed hairs of the stem and calyx, and generally more acuminate sepals. From the Mexican *P. fusca* and *P. comarioides* it differs in the leaflets, which are serrate to the very base. It seems to be more common than *P. Thurberi* and has about the same range.

Arizona: Rothrock, no. 399, 1874; C. G. Pringle, no. 305, 1881; 1884; no. 1,578, 1887; M. E. Jones, 1884; J. G. Lemmon,

no. 2699, 1882; 1892; E. A. Mearns, no. 50, 1887; T. E. Wilcox. 1893. *New Mexico:* H. H. Rusby, no. 128, 1881.

The *Argentinae* are a natural group, perhaps worth generic rank. The plant is propagated by true runners as in *Fragaria*. The style is lateral as in that genus and the achene large with thick corky shell. These characters are not found in any other species of *Potentilla*, at least not in America. All the species belonging here have pinnate leaves more or less white silky, at least beneath. The species of the group are *P. anserinoides* of New Zealand and the following:

POTENTILLA ANSERINA L. Sp. Pl. 495. 1753.

This well known species is found in the colder part of the north temperate and the arctic zones of both hemispheres, extending in North America as far south as New Jersey and Nebraska, and in the mountains to New Mexico. The following varieties may be distinguished:

POTENTILLA ANSERINA GRANDIS Torr & Gray, Fl. N. Am. 1: 444. 1840.

A luxuriant form growing among grass, with larger, erect or ascending leaves, sometimes one foot long. It is common on the Pacific coast from California to Alaska, but also collected in Montana, Newfoundland and Greenland.

POTENTILLA ANSERINA CONCOLOR Ser. in DC. Prod. 2: 582. 1825.

It differs from the species in the leaves, which are silky white on both the upper and lower surfaces. In America it is confined to the Rocky Mountain Region from Mackenzie River to New Mexico, California and Alaska.

POTENTILLA EGEDII Wormsk. Fl. Dan. 9: fasc. 27. 5.

Potentilla Anserina Egedii Torr. & Gray, Fl. N. Am. 1: 444. 1840.

Potentilla Anserina Groenlandica Tratt. Ros. Mon. 4: no. 13. 1824.

I think that this is a good species, differing from *P. Anserina* in the delicate habit, the deeper and more open incisions of the leaflets and the scant pubescence. In the specimens examined by me the achenes were also different in shape. In *P. Egedii* they were

decidedly lenticular, while in *P. Anserina* the upper end is thicker and rounded-triangular in cross-section.

P. Egedii is an arctic species, found from Greenland to Alaska, and extending southward on the coasts to Maine and Oregon.

The *Fruticosae* differ from the other groups of North American *Potentillae* in the following respects: The style is lateral, ovule ascending, achene hairy and the plant more or less shrubby. The American species are:

POTENTILLA FRUTICOSA L. Sp. Pl. 495. 1753.

This is a native of the north temperate zone, extending in America from Labrador to Alaska south to New Jersey and Colorado. In mountain regions the leaflets are narrower with revolute margins, and this form represents *P. floribunda* Pursh, *P. fruticosa tenuifolia* Lehm. The extreme is reached by the form collected by Watson during the King's expedition and described as *P. fruticosa parvifolia* Wats. It has nearly linear leaflets and smaller long-pedicelled flowers.

POTENTILLA TRIDENTATA Soland.; Ait. Hort. Kew. 2: 216. 1789.

P. retusa Retz. is generally cited as a synonym of *P. tridentata* and is much older, but *P. retusa* is described as having yellow flowers, and in the figure of it in Flora Danica the petals are also yellow, while in *P. tridentata*, as is well known, they are white. If made from a specimen of *P. tridentata* it is, indeed, a very poor one, as it resembles *Sibbaldia procumbens* more than *P. tridentata*. It can, however, not represent that species, as the petals exceed the sepals. What *P. retusa* was, or is, is still a secret.

P. tridentata extends from Greenland to the mountains of North Carolina and westward to Minnesota.

Biflorae. This contains only one species, placed by Lehmann with *P. fruticosa*, *P. tridentata* and their allies. The style is, however, nearly terminal, and the achenes not hairy. It resembles the *Fruticosae* in the thickish leaves, whose margins are entire, and the non-emarginate petals. The receptacle has also very long hairs.

POTENTILLA BIFLORA Willd.; Schlecht. Mag. Gesel. Nat. Fr. Berlin, 7: 297. 1813.

It is a native of northeastern Asia, Alaska and the arctic coast of North America, but a rather rare plant.

Studies in the Leguminosae.—II.

By Anna Murray Vail.

NOTES ON PAROSELA, WITH DESCRIPTIONS OF NEW SPECIES.

Parosela Arizonica n. sp.

Suffruticose, 1.5–2 dm. high, branched from the base, strongly aromatic-glandular throughout, minutely cinereous-pubescent below, glabrous above; stipules minute; basal leaves on the short, old? shoots 1 cm. long or less, grayish-green, cinereous, becoming glabrate? the leaflets 5–9, linear, strongly involute, 2–3 mm. long, obtuse, beset with scattered glands; upper leaves 2–4 cm. long, yellowish-green, glabrous or nearly so, the rhachis channeled, at length falcate, leaflets 9–21, involute, 3–6 mm. long, linear, bright yellow-green, thick and coriaceous, glandular, falcate, somewhat reflexed; peduncles terminal, 1–3 cm. long; heads subglobose, 6–10 mm. long; bracts 2–3 mm. long, broadly ovate, acute, somewhat scarious, minutely pubescent, the outer ones obtuse at the base, the inner ones unguiculate, bearded on the back of the claw; calyx slightly less than 3 mm. long, membranous, contracted at the mouth, teeth minute, acute; corolla white, very small; pod 2–5 mm. long, obliquely ovoid; seed 2 mm. long, obtuse at the hilum, pale yellow.

A species remarkable for its numerous, low, erect branches, bright green upper leaves, and very small heads of white flowers. The specimens from which this description has been drawn are preserved in Herb. Columbia University, and were sent to me by Miss Alice Eastwood, and the label reads, "Vicinity of Tucson, Arizona; collected by Herbert Brown, October, 1895."

Parosela thyrsiflora (A. Gray).

Dalea thyrsiflora A Gray, Proc. Am. Acad. **5**: 177. 1861.

Dalea Dominigensis var. *paucifolia* Coulter, Contr. U. S. Nat. Herb. No. **2**: 34. 1890.

Parosela Grayi.

Dalea laevigata A. Gray, Pl. Wright. **2**: 38. 1853. Not *Dalea laevigata* Moç. & Sessé; in Don, Gen. Syst. **2**: 224. 1832.

PAROSELA ELATIOR (A. Gray).

Dalea aurea var. *elatior* A. Gray, Pl. Wright. 1: 46. 1852.
Dalea rubescens S. Wats. Proc. Am. Acad. 17: 369. 1882.
Parosela rubescens A. M. Vail, Trans. N. Y. Acad. Sci. 14: 34. 1894.

Intermediate between *P. aurea* and *P. nana*. The bracts are narrower and longer than those of either of the above species, the corolla turns reddish-purple and the leaves are usually less villous.

PAROSELA WISLIZENI (A. Gray) A. M. Vail, Trans. N. Y. Acad. Sci. 14: 34. 1894.

A little-known species which shows great variation in the color of the flowers, some of them being lilac, others rose-colored and others again rose-colored with the standard ochroleucous and in the latter case closely resembling those of *Parosela lasiostachya* (Benth.), which species is glabrous throughout with somewhat fleshy leaves. *P. Wislizeni* may not be more than a pubescent form of the latter species. In Herb. Canby, preserved in Herb. N. Y. College of Pharmacy, a specimen of *P. lasiostachya* collected by Parry and Palmer, no. 15, from near San Luis Potosi shows the characteristic acute leaflets of that species, the upper ones being faintly silky villous and identical with those of some smoother forms of *P. Wislizeni*.

PAROSELA WISLIZENI SESSILIS (A. Gray).

Dalea Wislizeni var. *sessilis* A. Gray, Proc. Am. Acad. 16: 105. 1880.

A very noteworthy variation. A low shrub with spreading slender branches and short racemes of showy, rose-colored flowers sessile on the short, lateral branchlets. The general appearance of the plant is that of *Parosela formosa* (Torrey), and in several instances has been confounded with it. The leaflets are very small, greyish-green, silky-pubescent or rarely glabrate, with small dark glands on the lower surface, and are not at all fleshy. The bracts are oblong or oblong-lanceolate, caducous, the keel petals are remarkable for the two linear-oblong glands in the form of a v at the apex and the short banner is pale yellow

Parosela formosa has numerous short, divaricate branches, very small, glabrous leaflets, scarious, concave, glabrous, caducous bracts, eglandulose, bright rose-purple keel petals and a pale yellow banner.

PAROSELA JAMESII (Torr.)

Psoralea Jamesii Torr. Ann. Lyc. N. Y. 2: 175. 1828.
Jamesia obovata Rafin. Atl. Journ. 145. 1832.
Dalea Jamesii Torr. & Gray, Fl. N. Am. 1: 308. 1838.

Very close to the above species is *Parosela triphylla* (Pav.) from northern and southern Mexico. It has longer and more truly decumbent or trailing stems and somewhat narrower leaflets which are invariably glabrous on the upper surface. *P. Jamesii* may be only a northern form of the Mexican plant. Here also appears to belong *Parosela prostrata* (Orteg.), of which I have not seen any specimens.

PAROSELA WRIGHTII (A. Gray).

Dalea Wrightii A. Gray, Pl. Wright. 1: 49. 1852.

Closely resembling *P. Jamesii*, from which it differs in the apparently more erect habit, the five oblong leaflets and the rose-colored flowers. A closely allied species is *P. Luisana* (S. Wats.) from the north of Mexico (Schaffner, no. 808; Parry and Palmer, no. 164). It is very low (4–6 cm.), with short decumbent stems, slender leaflets and small capitate racemes of yellow flowers. No. 162, collected by Parry and Palmer, in the same region, appears to be a very small form of *P. Wrightii* and intermediate between it and *P. Luisana*. Further collections may prove them to be but one species.

PAROSELA FREMONTII (Torr.)

Dalea Fremontii Torr.; A. Gray, Mem. Am. Acad. 5: 316. 1855.

The type specimen of *D. Fremontii*, no. 417, collected by Fremont in the "Pah-Utah" country, southwest California, May 5th, 1844, is preserved in Herb. Columbia University, and includes many specimens since distributed as *Dalea Californica* S. Wats. Proc. Am. Acad. Sci. 11: 132, 1876, the type of which is no. 86, C. C. Parry and J. G. Lemmon, from southern California, 1876.

These two species are so close as to make it doubtful that they are not the same. The leaves are identical, the greatest difference being in the calyx, which in *Parosela Californica* (S. Wats.) is smaller, more densely canescent-pubescent and more distinctly ribbed. *Parosela Fremontii* is very variable and appears to intergrade with the three following species.

PAROSELA JOHNSONI (S. Wats.)

Dalea Johnsoni S. Wats. Bot. King's Rep. 5: 64. 1871.

Differing from *P. Fremontii* mainly in the longer, narrowly linear leaflets which are only rarely decurrent on the rhachis.

PAROSELA AMOENA (S. Wats.).

Dalea amoena S. Wats. Am. Nat. 7: 300. 1876.

This species was described from some rather fragmentary specimens collected by Mrs. E. P. Thompson, near Kanab, southern Utah, and now preserved in Herb. Gray. Some similar specimens were collected in Utah by Captain Bishop in 1872, and are to be seen in U. S. Nat. Herb. at Washington. The leaflets vary from very acute to rather broadly obtuse, the three terminal ones often cohering and appearing as if variously lobed. The most marked characters are the slender, linear calyx-teeth, which are as long, or nearly as long, as the tube.

PAROSELA WHEELERI n. sp.

Apparently a low shrub; branchlets short, beset with small, scattered, elevated, prickle-like glands; leaves 3–7-foliolate, 1–2.5 cm. long, the rhachis flattish, strigose-hirsute; petioles 3–10 mm. long; leaflets 5–10 mm. long, 2–6 mm. wide, oblong to oblong-ovate, oblong-cuneate, spatulate or ovate, strigose-hirsute on both surfaces, less so above, glands small, scattered beneath, the terminal leaflet usually petiolulate, or rarely cohering with one of the lateral ones; flowers in short (2–4 cm. (?) long), few-flowered racemes; bracts not seen; calyx 5–7 mm. long, obscurely 10-ribbed, with oblong glands between the ribs, sparingly hirsute, at length glabrous, the subulate teeth ciliate, much enlarged in fruit, about the length of the tube; corolla bluish or reddish purple; legume 1 cm. or more long, obliquely oblong, glabrous or with a few scattered hairs, beset with large glands, nearly straight on the dorsal, rounded along the ventral suture, beaked by the stout base of the style; seed oblong, acutish at the base, brown.

This description has been drawn from a few fragments belonging to what appears to be a low shrub with straw-colored bark and short, almost fascicled branchlets. I have not seen any spines but the apex of the peduncle seems to indicate a spinescent termination.

Original locality, Nevada, Wheeler expedition, 1872. Type in Herb. Columbia College and U. S. Nat. Herb.

PAROSELA THOMPSONAE n. sp.

Apparently a low shrub; branchlets short? clothed with a short, close, whitish, retrorse pubescence or tomentum and beset with scattered, somewhat elevated reddish glands, becoming glabrate with age; stipules caducous, not seen; petioles 3–5 mm. long, leaves about 1.5 cm. long, 5–7 or more foliolate; leaflets about 2 mm. long, oblong, obtuse, acutish at the base, somewhat thick, minutely strigose-hirsute on both surfaces, margins revolute, with a few dark glands beneath; racemes 3–4 cm. long, loosely-flowered, short-peduncled; bracts not seen, caducous; calyx 4 mm. long, glabrous, conspicuously 10-ribbed, with 1–3 round or oblong red glands between each rib below the sinus, the broadly triangular teeth ciliate, pubescent on the inner surface, shorter than the tube; corolla rose-purple, twice as long as the calyx, the petals with a few slender glands near the apex; legume and seeds not seen.

A species with the calyx allied to that of *Parosela maritima* (Brandegee) from Lower California, but differing in the broad, ciliate, acutish or obtuse, short calyx-teeth and the very symmetrical arrangement of the reddish glands on the ribs of the calyx-tube. The space between the two upper ribs is eglandulose, the next two spaces on either side have two glands each, one above the other, the remaining spaces having one gland each. In the very fragmentary specimens examined, this was a constant character.

Original locality, Northern Arizona.

Type collected by Mrs. Thompson, 1872.

Dalea amoena in part, in U. S. Nat. Herbarium.

Notes on some undescribed and little known Plants of the Alabama Flora.

By Charles Mohr.

(Plates 289–291).

Sagittaria viscosa n. sp.

Monoecious, scape slender, erect, over two feet long, exceeding the leaves, sparingly branched from the lowest verticil; leaves membranaceous, smooth, broadly ovate, rounded towards the slightly apiculate apex; lamina 6′–7′ wide, 12′–14′ long, deeply sagittate, the broad lobes acute, 6′ long, at first gradually, finally widely spreading; panicle slender, main branch 12′–13′ long, the branches about half its length; bracts coriaceous, papillose, rugose, viscid, free at the base, oblong-ovate, obtuse; verticils on the main stem 8–10, distant, with 2–3, rarely more flowers borne on slender, rigid, erect, spreading pedicels, about 1′ long, those of the 3–4 fertile verticils little shorter; sepals thick, and like the bracts papillose, glutinous, ovate, lanceolate; stamens numerous (20–25), $\frac{3}{16}$′ long, filament two-thirds longer than the anther, scarcely attenuate and strongly villous towards the base; immature achenes with a slender erect beak, narrowly winged; flowers large, fully ¾′ across. (Plate 289.)

Deep muddy borders of marsh on the Mobile river, May 28, 1896. On a second visit to the same locality to collect specimens with the rhizome and mature fruit the plants were destroyed by the clearing and partial drainage of the front of the marsh.

At once recognized from its allies of the same group, by the thin leaves, papillose viscid bracts and sepals. Type in herbarium of the Geological Survey of Alabama.

Sagittaria Mohrii J. G. Smith.

"Leaves lanceolate-linear, long attenuate to the acute apex, tapering gradually to the slender ascending petiole, 15′–20′ long by ⅜′–½′ wide; scape, with 6–8 verticils shorter than the leaves, simple, triquetrous, weak, declining and decumbent after flowering, frequently ripening the fruit under water; the inflorescence narrowly pyramidal, bracts ⅜′–½′ long, connected in the middle, fertile pedicels spreading, somewhat longer than the sterile in 3–4 verticils, ½′–⅝′ long; sepals oblong, obtuse, $\frac{1}{10}$′–⅛′ long, stamens 9–12, anthers broadly elliptical; achenes crenulately crested, broadly winged, the broad margins laterally unicostate or narrowly winged; fruiting head globose, ¼′–$\frac{5}{16}$′ in diameter. (Plate 290.)

"Partially submerged aquatic, frequently growing in tufts at the nodes of long horizontal stolons."

Muddy shallow ponds near the western suburbs of Mobile city, August 18, 1895. Type in herbarium of ths Geological Survey of Alabama.

In specimens from a partially dried up, shallow pool the leaves are very narrowly linear or the blades entirely wanting and reduced to rigid, triangular phyllodia, August, 1896.

SAGITTARIA LONGIROSTRA AUSTRALIS J. G. Smith.

Plant 2 dm. high, the scape 4 dm.; leaves ovate-elliptical, obtuse, 8–10 cm. long, the basal lobes obtuse; fertile pedicels 10–13 mm. long, exceeding the bracts; achenium 3–3½ mm. long. (Plate 291).

Collected by Dr. Charles Mohr, Cullman, Alabama, August 4, 1896. Type in Herb. Missouri Botanical Garden.

SAGITTARIA CYCLOPTERA (J. G. Smith.)

Sagittaria graminea cycloptera J. G. Smith, Ann. Rep. Mo. Bot. Gard. 6: 1894.

Lower pine region. In sandy shallow pine barren ponds. Mobile and Washington county, May–June.

SAGITTARIA CHAPMANI (J. G. Smith.)

Sagittaria graminea Chapmani J. G. Smith, l. c. 1894.

Coast plain. Muddy ditches, borders of marshes and ponds. Mobile. April and again in the fall.

By observations in the field made through the past two seasons the superficial characters of these plants, widely differing in their aspects from the type to which they were referred, have been found perfectly stable and no intermediate forms connecting them with the typical form or with each other, could be found.

SAGITTARIA MONTEVIDENSIS Cham. & Schlecht. Linnaea, 2: 156. 1827.

Deep grassy marshes and banks of Mobile river, August, 1895.

Frequent. During the season just passed this stately plant was found in the western suburbs of Mobile in deep ditches, some distance from the Mobile river. It has become naturalized and is most probably adventive from the La Plata country.

MANISURIS CORRUGATA (Bald.)

Rottboellia corrugata Baldwin, Am. Journ. Sci. 1: 355. 1819.

MANISURIS CORRUGATA AREOLATA (Hackel).

Rottboellia corrugata var. *areolata* Hackel in DC. Mon. Phan. 6: 309. 1889.

ANDROPOGON GLOMERATUS HIRSUTIOR (Hackel).

Andropogon macrourus var. *hirsutior* Hackel, l. c. 6: 488. 1889.

ANDROPOGON GLOMERATUS GLAUCOPSIS (Elliott).

Andropogon macrourus glaucopsis Ell. Sk. 1: 180. 1817.

CHRYSOPOGON ELLIOTTII.

Andropogon nutans Elliott, Sk. 1: 144. 1816. Not L.

To this species is referred the plant with the longer branches of the loose panicle more or less drooping, and the fertile glumes of a darker brown, covered with long silky hairs. It is close to *C. avenaceum*, but by the above characters clearly distinct.

CHRYSPOGON NUTANS LINNEANUS (Hackel).

Sorghum nutans Linneanum Hackel, in Mart. Fl. Bras. 2: Part 3, 276. 1883.

Readily recognized by the weak decumbent stem, contracted panicle, with the caducous spikelets scattered, and the fertile glume of deep dark brown, with a stouter and much longer awn. Confined to the coast region and preferring a closer soil.

PASPALUM RACEMULOSUM Nutt.; Chap. Fl. 571. 1860.

Paspalum racemosum Nutt. Fras. Am. Phil. Soc. 5: 145. 1837. Not Lam., fide T. H. Kearney.

Dry pine barrens, Mobile.

PASPALUM GLABRATUM (Engelm.)

Paspalum Floridanum var. *glabratum* Engelm.; Vasey, Contrib. U. S. Nat. Herb. 3: 20. 1892.

Smooth and glaucous throughout, of a lower and more slender growth, scarcely over 2½° high from a strong, horizontal, somewhat jointed rootstock, leaves shorter than the culm, 8′–12′ long by 1½″–2″ wide, long-acuminate, sheaths shorter than the joints; ligule chartaceous, obtuse; panicle of 4–6 erect, spreading, short-stalked, more or less distant spikes; spikelets smaller than in *P.*

Floridanum, mostly in two rows on the narrow, very flexuous rhachis. The essential characters are to all appearances permanent. The species is less frequent than *P. Floridanum* and prefers a wet to damp sandy soil. Mobile, Washington Co., Yellow Pine.

FIMBRISTYLIS PUBERULA (Michx.) Vahl, Enum. 2: 289. 1806.

Scirpus puberulus Michx. Fl. Bor. Am. 1: 31. 1803.

Scirpus ferrugineus Elliott, Sk. 1: 85. 1817.

Fimbristylis spadicea var. *puberula* Chap. Fl. 522. 1860.

Found under widely differing conditions of soil, in the salty marshes on the sea shore as well as in the dry pine barren of the coast region farther inland, and without the slightest deviation in its characters from those described by Michaux.

Salt marshes, Dauphin Island, Mobile Co., flat pine barrens, Fowl river, April–May.

STENOPHYLLUS CAPILLARIS (L.) Britt. Bull. Torr. Club, 21: 30. 1894. In part.

Scirpus capillaris L. Sp. Pl. 49. 1753.

Fimbristylis capillaris Gray, Man. 530. In part? 1848.

Caespitosely tufted, low; stems filiform, weak; leaves capillary, soft; sheaths bearded at the throat; spikelets scarcely more than 2 or 3 in a cluster, sessile, shorter or longer stalked; bracts very short.

Mountain region, Clay Co., Che-aw-haw mountain. Never observed in the low country. Appears to be of a more northern distribution, and southward is confined to the mountains.

STENOPHYLLUS CILIATIFOLIUS (Elliott).

Scirpus ciliatifolius Ell. Sk. 1: 82. 1816.

Isolepis ciliatifolius Torr. Ann. Lyc. N. Y. 3: 352. 1836.

A stouter plant than the above, growing in single tufts; stems rigid, almost setaceous, exceeding the leaves in length; leaves somewhat stiff, acute, sheath loosely covered with long silky hairs; spikelets in many-rayed, compound umbels, the rays little shorter than the bracts. Flowers and achenes as in *S. capillaris*, of which it might be more properly regarded as a strongly marked variety, at once distinguished by its more robust habit, the rigid stems and

leaves, and by the inflorescence, and as Elliott remarks, resembling somewhat *Fimbristylis autumnalis* in appearance and size.

Coastplain, dry sandy places, common; September–October. Coast of South Carolina, Florida and Texas.

LIMODORUM MULTIFLORUM (Lindl.)

Calopogon multiflorus Lindl. Gen. & Sp. Orch. 425. 1835.
Coastplain. Flat damp pine barrens. Mobile. Rare. April.

LIMODORUM PALLIDUM (Chapm.)

Calopogon pallidus Chapm. Fl. 457. 1860.
Lower Pine Belt. Boggy Pine Barrens. Mobile. May–June.

RORIPA WALTERI (Elliott).

Sisymbrium tanacetifolium Walt. Fl. Car. 174. 1788. Not L.
Sisymbrium Walteri Elliott, Sk. 2: 146. 1824.
Nasturtium tanacetifolium Hook. & Arn. Jour. Bot. 1: 190. 1835.
Cultivated and waste ground. Mobile. February–March.

SARRACENIA FLAVA CATESBAEI (Elliott).

Sarracenia Catesbaei Elliott, Sk. 2: 11. 1824.

Near the type, differs in habit of growth and range of distribution. Leaves rarely over 12′ long, with a very narrow wing, erect hood, dark purple veined, the lamina covered with a fine silky pubescence. Apparently confined to the mountains of South Carolina and Alabama.

Alabama, De Kalb Co., Lookout Mountain, bank of Little river, about 1700 feet.

CAKILE MARITIMA GENICULATA Robinson, in Gray, Syn. Fl. N. A. 1: 132. 1895.

Cakile maritima var *aequalis* Coult. Bot. W. Tex. 22. 1891. Not Chapm.

Specimens from the seashore of Alabama and distributed as *Cakile maritima* var *aequalis* Chapm. have to be referred to this variety. The prostrate racemes are 8′–10′ long, strongly geniculate. In the Alabama specimens the second joint of the ribbed pods is acuminate and rather acute.

EUPHORBIA PILULIFERA DISCOLOR Engelm. in Torr. Bot. Mex. Bound. Surv. 188. 1859.

In our specimens the close, cymulose clusters are on peduncles ¼′–⅜′ long, with hairy involucre, and small appendages, seeds minute, acute, angled, faintly pitted.

Adventive, with ballast and during the past years widely diffused over cultivated grounds in the vicinity of Mobile, becoming a troublesome weed. Stem 8′–10′ high, erect or assurgent, the plant purplish.

ASCYRUM MULTICAULE Michx. Fl. Bor. Am. 2: 77. 1803.

Ascyrum Crux-Andreae L. Sp. Pl. 788. 1753. (?) and of most American authors.

Considering the confusion existing in the nomenclature of *Ascyrum Crux-Andreae* and *A. hypericoides*, and the obscurity surrounding the Linnaean species, Michaux's name as the next available has been taken for this species; it comprises the northern forms and those extending southward which are identical with them. Common throughout the State in various forms difficult to define.

ASCYRUM HYPERICOIDES L. Sp. Pl. ed. 2, 1108. 1764. Hemsl. Bot. Centr. Am. 1: 82. 1879–88; and also Coult.; in Bot. Gaz. 11: 80. 1886.

Ascyrum Crux-Andreae var. *angustifolium* Nutt. Gen. 2: 16. 1818.

Ascyrum Crux-Andreae of all southern authors (Coulter l. c.).

Coast plain. Damp sandy pine barrens, not infrequent.

HYPERICUM ASPALATHOIDES Willd. Sp. Pl. 3: 1451. 1803.

Hypericum fasciculatum var. *aspalathoides* Chapm. Fl. 40. 1860.

Clearly distinct by permanent characters.

Lower pine region and coast plain. Shallow, pine barren ponds, Mobile. September–October. Frequent.

XOLISMA LIGUSTRINA FOLIOSIFLORA (Michx.)

Andromeda paniculata foliosiflora Michx. Fl. Bor. Am. 1: 255. 1803.

Andromeda frondosa Pursh, Fl. Am. Sept. 295. 1814.

Andromeda ligustrina var. *pubescens* Gray, Syn. Fl. N.A. 2: Part 1, 33. 1878.

The extreme form from the Atlantic coast and Gulf region has a decidedly different aspect from the typical form, and is distinguished by the dense panicles with stout pedicelled flowers, 3 or 4 from the same bud, and also by its pubescence. It is intimately connected with the type by intergrading forms frequently met with farther north, and can only take varietal rank.

Coast plain, damp borders of pine barren streams, Mobile. May. Frequent.

GAYLUSSACIA TOMENTOSA (Pursh.) Chapm.

Vaccinium tomentosum Pursh; Gray, Syn. Fl. N. A. 2: Part 1, 19. 1818.

Gaylussacia frondosa var. *tomentosa* Gray, Syn. Fl. N. A. l. c.

Low, slender shrub, 1°–2° high.

Alabama, "Metamorphic Hills" and lower pine region.

Auburn, Underwood & Earle. Altitude 860 ft. Mobile, Springhill. Altitude 220 ft. April. Rare.

VACCINIUM STAMINEUM MELANOCARPUM n. var. Southern Gooseberry.

Shrub 2°–3° high, branched from near the base; leaves oblong-lanceolate, 2′–4′ long, ¾′–1′ wide, like the branchlets smoothish or pubescent; racemes elongated, 2′–2½′ long, loosely 4–8 flowered; pedicels slender, drooping from the axils of persistent ovate-oblong bracts; berries nearly double the size of the typical form, fully ⅜′ in diameter, shining black with a juicy, deep purple pulp, palatable, sweetish, with a slightly tart, pleasant flavor.

Mountain region. Rocky shaded hills. Frequent in the central and northern part of the State.

STEIRONEMA INTERMEDIUM Kearney, Bull. Torr. Bot. Club, 21: 26. *pl. 209.* 1894.

First collected on the summit of Alpine mountain, Talladega county, growing abundantly between bare rocks of sandstone near the signal station, alt., 1800 ft. September 20, 1893, past flowering and with matured capsules. During the past season on the

Blue Ridge or Talladega mountain, Clay county, at the rocky summit of Che-aw-haw mountain, alt., 2400 ft., and in rocky woods of the Delta divide, alt., 1700 ft., in full bloom, July.

SABBATIA DODECANDRA STRICTA Gray.

Sabbatia chloroides var. *stricta* Gray, Syn. Fl. N. A. **2**: Part 1, 115. 1878.

Littoral region, Baldwin county, near Perdido Bay. Brackish swamps, July.

IPOMOEA BARBIGERA (G. Don) Sweet. Fl. Gard. *pl. 86.* 1818.

Pharbites barbigera G. Don, Gen. Syst. **4**: 262. 1838.

Matches the illustration by Sweet in every detail excepting the inflorescence. Peduncles frequently 2, rarely more than 3-flowered. This most vigorous and rapidly growing climber has been strangely overlooked by our botanists. With the fleshy stem frequently from ¼′–½′ thick, climbing over bush and tree, this plant is one of the most injurious of the bindweeds infesting the gardens and fields in the lower belt of the Carolinian and in the Louisianian zone of Alabama and Mississippi. The flowers are azure, white in the throat. June–September. Common from the mountains to the coast.

Type locality. North America.

SCUTELLARIA INCANA PUNCTATA (Chapm.)

Scutellaria canescens var. *punctata* Chapm. Fl. 323. 1860.

Mountain region to coast pine belt. Blount Co., Cullman Co., alt., 600 ft.

SOLANUM HIRSUTUM (Vahl) Dunal, Solan. 158. 1813.

Solanum nigrum var. *hirsutum* Vahl, **2**: 40. 1790–94.

Adventive from the Mediterranean countries of the old world. Common ballast plant. Naturalized on the coast. Mobile, border of swamps. June–October.

MICRANTHEMUM ORBICULATUM EMARGINATUM (Elliott).

Micranthemum emarginatum Ell. Sk. **1**: 18. 1817.

Distinct from the typical form by the habit of growth and habitat. The stem is 4–6 inches long, submersed and floating in

clear brooks, singly or a few from the same root; and never found in dense patches covering muddy banks or on the miry borders of pools; leaves almost orbicular, slightly emarginate, ½′–⅜′ wide, more distant, and the flowers smaller than in the type.

Baldwin Co., Ga., Elliott; Louisiana, Hale.

VIBURNUM NITIDUM Ait. Hort. Kew. 1: 371. 1789.

Viburnum nudum var. *angustifolium* T. & G. Fl. N. A. 2: 14. 1841.

Slender shrub 12°–15° high; differs from *V. nudum* by its weak, reclining stem and drooping branches, the smooth, oblong-lanceolate, acute or acuminate entire or obscurely crenulate leaves, the quadrangular, sparingly scurfy branches, and the slightly acute berries.

Coast region. Borders of sandy swamps, along pine barren streams. Mobile. Frequent with *V. nudum*. April.

OLDENLANDIA LITTORALIS n. sp.

Hedyotis glomerata Elliott; T. & G. Fl. N. A. 2: 42. In part. 1841.

Oldenlandia glomerata Michx.; Gray, Syn. Fl. N. A. 1: Part 2, 47. In part. 1884. Chapm. Fl. 181. In part. 1860.

Perennial from a slender, somewhat ligneous root; stem erect or slightly decumbent at the base, 8′–20′ high, simple or with a few spreading branches, smooth or slightly hirsute, terete; leaves rather stiff-lanceolate to oblong-lanceolate, sessile, glabrous, roughish on the midrib and margin, ⅛′–¼′ wide, ⅜′–⅝′ long; flowers in sessile or subsessile axillary and terminal clusters; calyx-lobes broadly triangular, as long or shorter than the smooth or hirsute capsule; corolla pale blue (pearl blue); seeds minute, roundish, strongly angulate and reticulate under a lens.

Distinct from *O. uniflora*, with which it has been confounded, and distinguished from it by the erect columnar stem, narrower, sessile leaves and less foliaceous calyx-lobes.

Coast plain. Borders fresh or brackish ponds; most abundant on the saline flats exposed to occasional overflow by the tide. Mobile, August–October.

EUPATORIUM HYSSOPIFOLIUM ANGUSTISSIMUM n. var.

Glabrate; leaves opposite, fasciculate in the axils, crowded on

the short internodes, narrowly linear to filiform, rigid, scarcely $\frac{1}{16}$ wide, acute, deeply resinous-punctate, the margins revolute; branches alternate; upper leaves reduced to subulate bracts; inflorescence, involucral bracts, and achenium as in the typical form.

Upper division of the coast pine belt. Dale Co. Dr. Eugene A. Smith. August, 1890.

KUHNIA KUHNIA (Gaertn.)

Critonia Kuhnia Gaert. Fr. & Sem. **2**: 411. 1788–91.

Kuhnia Critonia Willd. Sp. Pl. **3**: 1773. 1804.

Kuhnia paniculata Cass. Dict. **24**: 516. 1821.

Kuhnia eupatorioides var. *gracilis* T. & G. Fl. N. A. **2**: 78. 1841.

Dry pine barrens. Springhill. September–October. Frequent.

CHONDROPHORA VIRGATA (Nutt.)

Chrysocoma virgata Nutt. Gen. **2**: 137. 1818.

Bigelovia nudata var *virgata* T. & G. Fl. N. A. **2**: 232. 1841.

Chondrophora nudata virgata Britt. Mem. Torr. Bot. Club, **5**: 317. 1894.

Allied to *C. nudata* by the inflorescence and other floral characters, but widely differing in the habit of growth, habitat, distribution and foliage.

The stout sprouts of the multicipitate rootstock are covered with the soft, filiform leaves, forming dense tufts; leaves of the flowering stalk filiform, 1′–1½′ long, more or less distant. In the specimens from Alabama and others from western Louisiana no tendency towards the development of a wider leaf blade could be observed; on a specimen from western Texas a few linear-spatulate leaves were found, scarcely $\frac{1}{8}$′ wide.

Mountain region. Rocky banks of Little River on Lookout Mountain, DeKalb Co. altitude 1,600 ft. September. Texas, western Louisiana.

New Species of Fungi imperfecti from Alabama.

BY F. S. EARLE.

During the past year Dr. Underwood and I have been preparing a preliminary list of the fungi of Alabama, which it is

hoped to publish at an early day, as a bulletin of the Alabama Experiment Station. During the course of the work a number of species have been found that seem to be undescribed. As the Experiment Station Bulletins do not have a sufficiently wide circulation among botanists to justify their use as a medium for publishing new species, I give below descriptions of some Fungi Imperfecti which appear to be new. Type specimens* are deposited in the herbaria of the Alabama Polytechnic Institute, the Agricultural Department at Washington, Harvard University, Columbia University and in the private herbarium of the writer. A number of other seemingly new species have been detected, but publication is withheld for the present for lack of sufficient material, or for further study.

COLLETOTRICHUM JUSSIAEAE n. sp.

On orbicular, yellowish-white, arid, purple-bordered spots, 2–10 mm. in diameter; acervuli scattered, not erumpent, small, about 100 μ; setae few, brown, transparent, occasionally septate, obtuse, mostly straight, from a somewhat enlarged base, about 70–100x6–8 μ.

On living leaves of *Jussiaea decurrens*, Auburn, Ala., August 27, 1891. G. F. Atkinson.

CYLINDROSPORIUM CELTIDIS n. sp.

Spots small, yellowish, indefinite and indistinct; acervuli hypophyllous, scattered, often only one on a spot, yellowish brown; spores cylindric or clavate, guttate, at length obscurely several septate, 20–25x3 μ.

On living leaves of *Celtis Mississippiensis*, Montgomery, Ala. November 10, 1891. G. F. Atkinson.

This somewhat closely resembles *Cylindrosporium ulmicolum* E. & E., on *Ulmus*, but the spores are only half as long.

DIPLODIA MACROSPORA n. sp.

Perithecia scattered, large, carbonaceous, buried, ostiole erumpent, elevating and rupturing the epidermis; spores very long, dark fuliginous, irregularly clavate, on short slender hyaline ba-

*It seems useless among the fungi to attempt to distinguish between types and duplicate types. The descriptions have always been drawn from an examination of all the available material and this has been divided into as many "type specimens" as the quantity justified.

sidia, unequally uniseptate, scarcely constricted, each cell often biguttate, oozing out and blackening the epidermis, 70–80x6–8 μ.

On old weathered cornstalks (*Zea Mays*). Auburn, Ala. Spring of 1896. Underwood & Earle.

This is a very striking species. The long dark spores can be distinctly seen with a hand magnifier scattered over the epidermis. The gross appearance is much like that of *Diplodia Zeae* Lev., but it is easily distinguished by the much larger spores.

HETEROSPORIUM SAMBUCI n. sp.

Effused, covering considerable areas with a black velvety tomentum; hyphae long, 100–200 μ, dark fuscous, erect, often fascicled, branching, septate, nodular, bearing spores pleurogenously at the enlarged nodes; spores oblong, dark fuscous, 3-septate, surface conspicuously roughened by minute tubercles, about 20–30x5 μ.

On dead and weathered stems of *Sambucus*, Auburn, Ala., March 13, 1896. Underwood & Earle.

ISARIOPSIS PILOSA n. sp.

Fascicles, scattered, black, opake, large, 400–600x150–200 μ clothed with numerous short fuscous hairs 4–12 μ long; spores very numerous, acrogenous, crowning the fascicles with a penicillate bundle, light fuscous, transparent, somewhat curved, 12 or more septate, about 75x3 μ.

On the bark of dead twigs of peach, Auburn, Ala., May 25, 1896. L. M. Underwood.

MACROPHOMA DIOSPYRI n. sp.

Thickly scattered over large indeterminate areas; perithecia buried, elevating the epidermis in prominent pustules, at length partially erumpent, surrounded by the ruptured epidermis, large, opening by a distinct ostiolum, dark brown, of soft cellular structure, reaching 200 μ; spores cylindric, sometimes slightly curved, ends abruptly pointed, faintly tinged with olive when seen in mass, contents homogeneous, not guttate nor granular, about 20x3 μ; basidia thread-like, shorter than the spores, forming an agglutinated nebulous central mass.

On half-grown fallen fruits of *Diospyros Virginiana*, Auburn, Ala., July, 1896. Underwood & Earle.

PESTALOZZIA FLAGELLATA n sp.

Epiphyllous on large orbicular or irregular brown spots, bordered by a narrow darker brown line; acervuli confined to a defi-

nitely limited central pallid area, usually elongate, seeming to follow the smaller veins, rimosely dehiscent; spores blackening the epidermis, fusoid, 4-septate, not constricted, 3 central cells dark fuscous, end cells hyaline, about 16x6 μ; stipe straight, slender, about equalling the spore, the single seta or flagellum bent at an abrupt angle, and prolonged nearly twice the length of the spore, reaching 28 μ.

On living leaves of *Quercus* sp. (*rubra?*), Auburn, Ala., August and September, 1891. B. M. Duggar.

PHYLLOSTICTA VACCINII n. sp.

Epiphyllous on brown irregular indeterminate spots, 1 cm. or more in diameter; perithecia scattered, erumpent, of soft texture, ostiole large, 8–10 μ, size variable, 80–12 μ; spores large, usually ovate, with a large (4 μ) spherical gutta near the broader end, about 12x6 μ.

On living leaves of *Vaccinium arboreum*, Auburn, Ala., April 25, 1896. Underwood & Earle.

PROSTHEMIUM PALMATUM n. sp.

Perithecia scattered over large whitened areas, elongate, hysteroid, black, carbonaceous, buried, at length partially erumpent, rupturing irregularly, or becoming discoid by the breaking away of upper portion; spores cylindric, light fuliginous, 1–3 septate, about 12–15x4 μ, united at base into bundles of 3 to 6, not stellate, but palmate or fascicled; basidia obsolete.

On rotten wood, Auburn, Ala., March 28, 1896. Underwood & Earle.

This genus does not seem to have been reported before from this country. The three known European species agree in the stellate arrangement of the spores in which they differ widely from our species.

SEPTORIA NEGLECTA n. sp.

On irregular determinate angular brownish arid spots, from 1 mm.–2 cm. or more, usually with a darker border; perithecia epiphyllous, or amphigenous, prominently erumpent, irregularly scattered, 106–120 μ or more; spores thread-like, continuous, faintly guttate, 30–40x1–1½ μ.

On persistent living leaves of *Quercus Phellos* growing as an undershrub, quite common, Auburn, Ala., February, March and April, 1896. Underwood & Earle.

SPORONEMA CAMELLIAE n. sp.

Epiphyllous on large white brown-bordered spots or areas, 2–5 cm. in diameter; perithecia thickly scattered, buried, elevating the epidermis, orbicular or somewhat elongate, usually rimosely dehiscent, occasionally stellate-laciniate, becoming discoid, of firm cellular texture, about 200 μ; spores cylindric, ends obtusely rounded, sometimes curved, usually bi-guttate, 12–18 x 4–5 μ; basidia short and thick, about equalling the spore, usually simple.

On living leaves of *Camellia Japonica*, Auburn, Ala., March and April, 1896. J. S. Burton.

The spots resemble very closely those caused by *Pestalozzia Guepini* Desm.

SPORONEMA ILICIS n. sp.

Epiphyllous on large deadened and whitened areas, usually involving the apical portion of the leaf; perithecia often somewhat concentrically arranged, or thickly scattered, large, brown, membranous, buried in the epidermis and coming off with it, usually somewhat elongate, elevating the epidermis and at length cracking it longitudinally or stellately; spores continuous, elliptic, hyaline, on short simple hyaline basidia about 12–15 x 4–6 μ.

On languishing leaves of *Ilex opaca*, Auburn, Ala., December, 1895; January, February and March, 1896. Underwood & Earle.

From a fourth to a half of the leaf is usually dead and conspicuously whitened. The living portion is usually bounded by a broad intermediate dark purplish border. The gross appearance is much like *Phyllosticta opaca* E. & E., N. A. F. 3443, but the spores are entirely different.

ALABAMA POLYTECHNIC INSTITUTE, AUBURN, ALA.

Reinke's Discussions of Lichenology.

BY ALBERT SCHNEIDER.

III.

PRELIMINARY CONSIDERATIONS OF A PHYLOGENETIC MORPHOLOGY OF LICHENS.*

Acharius,† the father of lichenology, classified lichens as a distinct order of plants. This method was not followed by later

* Reinke, J. Einige Voraussetzungen einer phylogenetischen Morphologie der Flechten. Pringsheim's Jahrbücher, **28**: 39–69. 1895.

† Acharius, E. Lichenographia Universalis, Göttingen, 1810.

botanists who included these plants sometimes with algae and sometimes with fungi. Nägeli* placed them with the algae under the family Lichenaceae, stating that they agree in vegetative habit with the Stilophoreae and Fucaceae. So-called modern botany persists in placing lichens with fungi, a procedure which the author has always considered unnatural and unscientific, because morphologically lichens resemble green assimilating plants (algae, etc.) and not fungi. Morphological conformation and habit is in all cases the expression of the organization of plants as they develop in obedience to the requirements of biological existence.

Sometimes plants that are widely separate as to their habits show a great similarity of form. Nothing would however be farther from the truth than to assume that these similarities of gross appearance were due to identical or similar causes. As an illustration is cited *Clavaria flava* and *Cladonia uncialis*. In both the anatomical conformations secure a maximum of surface-expansion. In the former plant this is for the special purpose of furthering reproduction, in the latter for the special purpose of furthering assimilation. A few similar illustrations are given, which emphasize the necessity of giving correct physiological interpretations to the structural conformations.

The author now enters upon a highly theoretical discussion of classification. A system may be either practical and artificial or theoretical and natural. Furthermore, the modern natural system is supposed to be built upon the basis of phylogenesis. The author has purposely refrained from designating the natural system as scientific, since the artificial system is likewise scientific.

There is no sound basis upon which to build a phylogenetic system. Paleontology fails us in the consideration of the most important questions; this is particularly true in the phylogeny of the thallophytes. Here we are almost entirely dependent upon evidence deduced from a study of the comparative morphology of existing plants. But what scientific right have we to formulate conclusions from such comparisons? What evidence have we of the genetic relationship of plant-types? The emphatic statement that ontogeny represents phylogenetic development is nothing

* Nägeli, K. Die neuen Algensysteme, und Versuch zur Begründung eines eignen Systems der Algen und Florideen, Zürich, 1847.

more nor less than a mere thesis which is worshipped by those whom scruples and doubt do not enthrall, and who, in their sanguinism, accept that as truth which in their estimation is desirable. The phylogenetic method of procedure has some scientific value. as is evidenced from the paleontologic data of general evolution. It is necessary in all cases to add to these phylogenetic constructions certain hypothetical assumptions so as to form a rationally appearing chain of evidence. To exclude hypothetical assumptions from the domains of science is impossible; they are necessary in botany as well as in physics and chemistry. It is the object of science to point out what constitutes positive facts and what is only relatively true or hypothetical. If we ignore this distinction we become unscientific. As an illustration, may be mentioned the premature fruit of hyper-Darwinism, which has such a deleterious influence in the realms of natural science.

The parts of a plant stand to each other in the relation of a morphological equilibrium. This equilibrium is more or less labile, but it may acquire a high degree of stability. In a given individual the greatest morphological lability exists in the embryo. It tends toward continual change. Among the higher plants (ex., a tree), there are as many points of labile equilibrium as there are meristematic areas. A mature leaf has reached the state of stable equilibrium; it changes neither in size or form. Neoformations may however be induced by special stimuli, producing a state of temporary lability.

All species are in a state of morphological lability as long as they are variable. Struggle for existence and other causes finally produced stability of form.

At this point the author's arguments become peculiarly weak and antiquated. He assumes that the majority of plants and animals now living have reached a state of morphological stability. Many stable forms have gone out of existence because they could not adapt themselves to the changes in environment. As evidence for the existence of such stability the author states that our most common plants of cultivation have not undergone any appreciable change within thousands of years. Man is cited to illustrate stability in the animal kingdom. Homer is compared with moderns to prove that the psychological peculiarities have

not undergone any changes within 4,000 years. He concludes that if man were a labile organism he would have undergone some appreciable change within that period. Temporary lability may occur, but there is a continual tendency toward the stable forms, or an optimum of adaptability. This peculiarly dogmatic argument has about it a certain cadaveric odor. It is in sharp contrast to the author's usually scientifically rational arguments.

The discussion of the lichen-thallus is next taken up. Sachs* maintains that the flatness of the lichen-thallus (foliose) is due to the direct influence of sunlight (photomorphosis). Reinke points out that this can not be the cause, since there are numerous lichens with fruticose thalli. Wherever or in what form the lichen-thallus occurs, it indicates a special morphological adaptation to favor the function of assimilation. If light and chlorophyll were the only factors concerned, then all assimilating organs would have the same structure, since constant factors must produce constant results.

Since lichens undoubtedly have a polyphyletic origin we have a striking illustration of the fact that identical morphological adaptations may be produced in phylogenetically distinct series. It demonstrates that a plant which is most suitably adapted to its environment constitutes a stable form, toward which the less perfect forms of the series tend. The author concludes that sexuality is the cause of variation; therefore, lichens which are propagated by soredia alone must have reached the highest degree of stability. The phylogenetic development in lichens must have been the result of reproduction from spores and gonidia. If a lichen in the course of its phylogenetic development becomes associated with a new alga it is changed from a stable form to a labile form. It may also be possible that one and the same fungus may unite with different algae (forms of *Cora*, *Sticta*, *Stictina*, and *Solarina*). This subject, however, requires further study. Change of algae has already been observed by Forssell.† According to Bonnier,‡

* Sachs, J. Physiologische Notizen, VIII. Mechanomorphose und Phylogenie. Flora, 78: 215–243. 1894.

† Forssell, K. B. J. Lichenologische Untersuchungen. Flora, 64: 1–8, 33–46. 1884.

‡ Bonnier, G. Germination des Lichens sur les protonémas des Mousses. Rev. Gen. de Bot. 1: 165–169. 1889.

lichens may also utilize the protonemas of various mosses. There is no doubt that many of the lower lichens will develop to some extent (in artificial media) without the algae,* but no lichen-fungus will develop to maturity in nature. From this we may conclude that all fungi which have entered into the formation of lichens no longer exist.

Phylogenetic morphology is intimately related to classification. It supplies science with the necessary building material for the natural system of the future. Conversely systematists in their various and varied attempts at classification have unconsciously added to our knowledge of phylogenetic morphology.

In a natural system the oldest morphological characters serve to limit the main divisions; the next oldest limit the families. The more recently acquired characters serve to define the genera and species. It is often difficult to determine what are in reality the old and new characters. In this difficulty lichens prove very interesting because it is to a certain degree possible to determine the relative ages of the phylogenetically acquired characters. The more recent characters occur in the thallus; the oldest in the apothecium and related structures, since these are as old as the lichen plus the age of the fungal ancestor. Accordingly the main divisions of the lichen-system should be based upon the characters of the apothecia, and not upon the thallus-characters. This, however, does not imply that the apothecia have undergone no variation; the variation is even considerable, as becomes evident upon comparing the lecanorine type with the lecideine. The same may be said of the spores. In general, however, the variations in the thallus are much more considerable and represent the direct characters of adaptation.

The future system of lichens will also consider the relation of these plants to their probable fungal ancestors. In the limitation of the genera it will be necessary to determine whether or not a given character was transmitted from the fungal ancestor or whether it was newly acquired.

The following is a brief summary of this paper:

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* Möller. Ueber die Kultur flechtenbildender Ascomyceten ohne Algen. Münster. 1887.

1. Morphological similarities may be induced by wholly distinct causes and may serve wholly different ends.

2. The majority of species (both vegetable and animal) are stable. Temporary lability may be induced artificially or otherwise. All subsequent changes again tend toward the stable form.

3. The form of the lichen-thallus indicates a special morphological adaptation to favor the function of assimilation.

4. The phylogenetic morphological characters of lichens are of great significance in the formation of a natural system as well as in the consideration of phylogenesis in general.

5. The more recently acquired characters of lichens are to be found in the thallus; the oldest in the apothecial structures.

6. The entire lichen-structure has undergone considerable change since its phylogenetic history.

New or Noteworthy American Grasses.—V.

By Geo. V. Nash.

Erianthus Tracyi n. sp.

Culms stout, erect, 2–4 m. high, smooth and glabrous, the nodes upwardly barbed with deciduous silky hairs, about 1 cm. long; sheaths closely embracing the culm, shorter than the internodes, smooth, glabrous, except at the apex, where they are pubescent with deciduous, long, silky, appressed hairs; ligule rounded, about 5 mm. long; leaves 5 dm. long or more, 1.5–3 cm. broad, narrowed toward the base, long-acuminate toward the apex, strongly scabrous on both surfaces, pilose on the upper side toward the base; panicle oblong, 3–5 dm. long, 8–12 cm. wide, cream-white, dense, the main axis and branches pubescent with long appressed silky hairs, the branches usually in 2's, much divided, ascending or nearly erect, 15 cm. long or less; spikelets lanceolate, 5–6 mm. long, about one-half again as long as the internodes, yellowish brown, usually marked with red, less than one-half the length of the involucral hairs; first and second scales firm-membranous, the former a little the longer, both pubescent with silky hairs, twice the length of the scales, the first acuminate, faintly 7-nerved at the base, 2-toothed and prominently 2-nerved at the apex, the two nerves scabrous, the second scale acute, the nerves hardly discernible; third and fourth scales hyaline, shorter than the first and second ones, ciliate on the margins, the third acute,

1-nerved, the fourth narrower, acuminate, 2-toothed, conspicuously 1-nerved, the nerve excurrent as a straight or slightly twisted (not spiral) awn, 1.5–2 cm. long.

Type collected at Starkville, Miss., on October 1, 1896, by Prof. S. M. Tracy, in whose honor I take pleasure in naming it. C. L. Pollard's no. 1,341, collected at the same locality, in August of the past year, is the same. Mr. Pollard informs me that it grows on moist open slopes.

The larger and denser panicle, the longer hairs both on the outer scales and at the base of the spikelet, and the longer awn, which is straight or nearly so (not coiled), readily separate it from *E. alopecuroides* L. The base of the awn in *E. Tracyi*, that portion included in the outer scales, is loosely twisted, while the same portion in *E. alopecuroides* is closely coiled.

At the present time I only have specimens from Mississippi, and would be exceedingly glad to receive more material from other localities.

PASPALUM BLODGETII Chapman.

It would seem best to maintain the above name, although perhaps not the oldest, for the plants that have been referred to *P. caespitosum* Fluegge. Chapman's type is preserved in the Herbarium of Columbia University, so that the positive identification of that species is possible. One of the forms which has been placed here is very different and surely worthy of specific rank. I have taken it out and described it below as new. Its differences from the plants here under consideration are there pointed out.

The reason which seems to make it desirable to maintain Chapman's name instead of Fluegge's is the inability to make the plants in my possession, which have been referred to *P. caespitosum*, agree with the description of Fluegge. He says, among his differentiating characters, that the scales are 5-nerved and the rachis as broad as the spikelets. In all the specimens at my disposal the scales are only 3-nerved and the rachis but one-half to two-thirds as wide as the spikelets. If this should be found to be true in all the specimens that have been referred to this species it would throw considerable doubt upon the validity of past determinations. As no certainty is possible in the matter of Fluegge's name until his type can be seen, it would seem preferable to

adopt, for the present at least, Chapman's name, about which there can be no doubt, as above stated. The *P. caespitosum longifolium* of Dr. Vasey would seem to me hardly worthy of the rank of a variety, as both long and short leaves occur on the same plant.

PASPALUM SIMPSONI n. sp.

Culms, upper sheaths, and surfaces of the leaves smooth and glabrous. Culms erect, slender, 2–8 dm. tall; sheaths loosely embracing the culm, the basal ones short and appressed-villuos, the remainder longer and usually much exceeded by the internodes of the mature culms, the uppermost one elongated; ligule very short and truncate; leaves erect or ascending, lanceolate, or linear-lanceolate, 2.5–14 cm. long, 2–10 mm. wide, rounded or slightly cordate at the base, acuminate at the apex, ciliate, glaucescent above; inflorescence 8–16 cm. long, the first internode of the main axis 3.5–5 cm. in length, the remainder gradually becoming shorter; spikes usually strict, 3–5, spreading or ascending, 2.5–7.5 cm. long, pubescent and pilose at the base, the rachis flat, winged, one-half to two-thirds as broad as the spikelets, narrower and more or less flexuous toward the apex, minutely scabrous on the margins; spikelets in 4 rows, in pairs on flattened minutely scabrous shorter pedicels, obicular-obovate, 1.5 mm. long, the two outer scales membranous, 3-nerved, the first one concave, pubescent with short spreading glandular-tipped hairs, the second flat, glabrous, or sparingly pubescent at the very base, the third scale chartaceous, concave, smooth and shining, yellowish, enclosing a palet of equal length and similar texture.

Collected by J. H. Simpson on No Name Key, Florida, in May, 1891, no. 184. I take pleasure in naming this grass in honor of Mr. Simpson, whose extensive collections in southern peninsular Florida, have added much to the knowledge of the flora of that most interesting region. The *Paspalum* in question has been confounded with *P. caespitosum* Fluegge, a discussion of which species occurs above under *P. Blodgettii*, and Mr. Simpson's plant, referred to previously, was distributed under the former name. Curtiss' no. 5440, collected at the same locality on June 26, 1895, is this same plant and was also distributed as *P. caespitosum*.

This grass is readily distinguished from *P. Blodgettii*, to which it is related, by its smaller and differently shaped spikelets, the pubescence of which is short, spreading and glandular-tipped, and by the broader and manifestly ciliate leaves. The spikelets in

P. Blodgettii are elliptic or elliptic-obovate, about one-half longer, and the pubescence scantier and composed of much longer hairs, which are appressed and not glandular-tipped; the leaves, moreover, are sparingly, if at all, ciliate.

PASPALUM VILLOSISSIMUM n. sp.

Whole plant, except the culm and spikelets, densely vilous, particularly the lower sheaths. Culms erect, smooth and glabrous, 5–10 dm. tall, from a thick and more or less branching rootstock, extending, when mature, much beyond the uppermost sheath, branching at the highest node, the usually single branch exserted but little beyond the sheath; nodes purple; sheaths loosely embracing the culm, those at the base short and overlapping, the remainder elongated, the uppermost sometimes without a leaf blade; ligule truncate, less than .5 mm. long; leaves erect, linear-lanceolate to lanceolate, 3–20 cm. long, 3–10 mm. wide, truncate or slightly rounded at the base, long-acuminate toward the apex, a ring of long hairs at the very base immediately above the ligule; spike single, rarely with an additional one below, slender, usually strict, or the longer a little arcuate, 7–11 cm. long, the rachis flat, about two-thirds as wide as the spikelets, wing-margined, somewhat flexuous, the margins serrulate; spikelets orbicular-obovate, .8–.9 mm. long, .75 mm. wide, by pairs, in four rows, on hispidulous pedicels about one-half their length; first and second scales membranous, strongly pubescent with short spreading glandular-tipped hairs, the former concave and 3-nerved, the latter flat with inrolled margins, 2-nerved; third scale similar in shape to the first, greenish white, chartaceous or coriaceous, enclosing a palet of equal length and similar texture.

Type collected by the writer at Eustis, Lake County, Florida, early in June, 1894, no. 946, and distributed as *P. setaceum*, from which it seems clearly distinct, the shorter and broader leaves and the pubescent spikelets readily separating it from that species. It resembles *P. dasyphyllum* Ell. in its pubescence, but its slender long-exserted culms and the slender spikes, usually single, serve well to distinguish it. In *P. dasyphyllum* the culm is much stouter, and the thicker spikes 2–4 in number, rarely 1.

Nos. 2019, collected at the same place, and 2416a at Tampa, both in 1895, belong here.

PANICUM ALBO-MARGINATUM n. sp.

Whole plant, with the exception of the spikelets and the lowermost sheaths, smooth and glabrous. Culms erect, slender, 1.5–4.5 dm. tall, somewhat branched toward the base; sheaths short, often

sparingly ciliate on the margins, those on the culm one-third the length of the internodes or less, 1.5–2.5 cm. long, those on the branches shorter and overlapping, 1 cm. long or less; ligule a ring of short hairs about .25 mm. long; leaves thick, erect, lanceolate, 1.5–4.5 cm. long, 2–8 mm. wide, acuminate, somewhat narrowed and rounded at the base, with a prominent thick, white, cartilaginous, serrulate margin about .25 mm. wide; panicle ovate in outline, the primary ones long-exserted, 2.5–4 cm. long, the branches ascending; the panicles on the branches smaller, shorter than the uppermost leaf; spikelets 1.5 mm. long, broadly obovate, obtuse, diverging from the branches; first scale orbicular, glabrous, one-fourth to one-third as long as the spikelet; second and third scales membranous, 7-nerved, strongly pubescent with short spreading hairs, the latter enclosing a hyaline palet about one-half its length; fourth scale chartaceous, oval, obtuse, 1.25 cm. long, about .8 mm. wide, enclosing a palet of equal length and similar texture.

Collected by the writer in the low pine land at Eustis, Lake County, Florida, early in June, 1894, no. 925. In habit it is much like *P. sphaerocarpon* Ell. It is probably the *P. nitidum* of Elliott.

PANICUM LATIFOLIUM L.

It may be of interest to call attention to a remark of Trinius in relation to this species, although the evidence as to what plant Linnaeus had in mind is so strong that it would hardly seem worth while to allude to it further. Trinius (Mem. Acad. St. Petersb., VI., 3: Pt. 2, 262, 1834), in the latter part of his description of this species, makes the following statement in parenthesis:

"Ob quam notam et ob Sloanei iconem optimam de Linnaei planta dubium nullum."

PANICUM LEUCOTHRIX n. sp.

Culms caespitose, 1–4.5 dm. tall, erect or ascending, somewhat branched, sparingly pubescent with ascending hairs, the nodes glabrous. Sheaths less than one-half as long as the internodes, 2 cm. long or less, usually purplish, pubescent with ascending or nearly appressed long white hairs, those at the base of the sheath more dense and spreading; ligule a ring of long white, erect hairs; leaves erect or nearly so, lanceolate, 2–6 cm. long, 3–7 mm. wide, acuminate at the apex, truncate or rounded at the partly clasping base, 7–9-nerved, rough and glabrous above or with a few minute scattered hairs, pubescent below with short appressed hairs; panicle ovate or oval, 2.5–6 cm. long, 2–4 cm. broad, its branches spreading or ascending, 2.5 cm. long or less; spikelets obovate, about .65 mm. long, .4 mm. wide; first scale membranous, one-quarter to one-third as long as the spikelet, orbicular-ovate, obtuse,

1-nerved; second and third scales membranous, equal in length, 7-nerved, strongly pubescent with short spreading hairs; fourth scale chartaceous, elliptic, yellowish-white, enclosing a palet of equal length and similar texture.

Type collected by the writer in the low pine land at Eustis, Lake County, Florida, in the latter part of July, 1894, no. 1338. Nos. 334 and 467, of the same collection, also belong here.

PANICUM MANATENSE n. sp.

Whole plant, with the few exceptions described below, smooth and glabrous. Culms 2–4 dm. long, strongly striate-grooved, decumbent, much branched, the lower and longer internodes arcuate; nodes often yellowish on one side; sheaths loose, ciliate along the margins, at least when young, the lower ones much shorter than the internodes, those at and toward the extremities of the branches crowded and overlapping; ligule truncate, very short; leaves erect or nearly so; lanceolate 3.5–9 cm. long, 7–15 mm. wide, acuminate at the apex, rounded at the sparsely ciliate base, 9–13-nerved; panicle ovate in outline, 4–6 cm. long, its branches single and divided almost to the base, 1.5–3 cm. long, ascending; spikelets on ascending pedicels usually longer than themselves, elliptic about 3.5 mm. long, 1.3 mm. wide, very acute; first scale membranous, slightly exceeding one-third the length of the spikelet, ovate, acute, 1–3-nerved; second and third scales 7–9-nerved, membranous, acute, strongly pubescent with spreading hairs, the latter with a hyaline palet about one-third its length; fourth scale chartaceous, elliptic 2.5 mm. long, strongly apiculate, enclosing a palet of similar texture as long as itself.

Collected by the writer on August 21, 1895, near a sulphur well in a wet hammock northeast of Palmetto, Manatee County, Florida, no. 2428a. Approaching *P. commutatum* Schult. in habit and general appearance, but the large and very acute spikelets readily distinguish it from that species.

AGROSTIS IDAHOENSIS n. sp.

Culms caespitose, slender, 2–4 dm. tall, erect, bearing usually two distant leaves below the middle; sheaths loosely embracing the culm, the lower ones short, the uppermost one elongated 4.5–9 cm. long; ligule membranous 3–4 mm. long, obtuse, cut-toothed at the apex, minutely pubescent on the outside; leaves narrowly linear, erect, 4–9 cm. long, 1–2 mm. wide, acuminate at the apex, rough, particularly on the margins; panicle oblong, 6–12 cm. long, 2.5–4.5 cm. wide, the axis smooth below, slightly scabrous above as are the branches and pedicels; branches of the panicle ascending 5.5 cm. long or less, usually in 5's, the secondary branches

more or less spreading; spikelets lanceolate and acuminate when closed, 2 mm. long, generally about equaling the pedicels, which are decidedly thickened at the apex and usually more or less spreading; empty scales acuminate, purplish, scabrous on the keels, the first longer than the second; flowering scale about three-fifths as long as the first scale; palet wanting.

Collected by A. A. and E. Gertrude Heller, at Forest, Nez Perces County, Idaho, on July 16, 1896, at an altitude of 3,500 feet, no. 3431. A very delicate and beautiful member of the genus and perfectly distinct from any species of that region with which I am acquainted.

DANTHONIA GLABRA n. sp.

Whole plant, with the few exceptions noted below, glabrous. Culms 4–7 dm. tall, erect, simple, striate, slightly rough just below the panicle, and puberulent for some distance below the brown nodes; sheaths smooth, only those at the base of the culm exceeding the internodes, the remainder much shorter than their internodes; ligule densely ciliate with silky hairs 1–2 mm. long; leaves smooth excepting at the apex, 1.5–3 mm. wide, erect, those on the sterile shoots 1.5 dm. long or more, those on the culm 5–10 cm. long, the basal ones shorter than the rest; panicle 5–8 cm. long, its axis, together with the erect or occasionally spreading branches, hispidulous; spikelets, including awns, 1.7–2 cm. long, 5–8-flowered, on hispidulous appressed pedicels, 2.5–7 mm. long; empty scales acuminate, the first 3-nerved, 1.3–1.7 cm. long, equalling or slightly shorter than the 5-nerved second; flowering scales 5–6 mm. long to base of the teeth, pubescent on the lower half of the margins, and occasionally sparingly so on the mid-nerve near the base, with erect silky hairs about 2 mm. long, teeth including awns 1.5–3 mm. long, one of the awns usually shorter than the other, the central awn 9–12 mm. long, more or less spreading, yellowish brown at the base, strongly hispidulous toward the green apex, about once twisted; palet about reaching to the base of the awn or nearly so, strongly ciliate on the two nerves.

Type specimens collected by Dr. John K. Small, on Little Stone Mountain, DeKalb County, Georgia, on July 5, 1895. In this the flowering scales are entirely glabrous on the back. In another form from New Jersey the flowering scales are sparingly pilose on the back near the base. This latter form was secured by Dr. John Torrey, at Quaker Bridge, in May, 1830; also by a party of the Torrey Botanical Club at Forked river, on May 30, 1896.

This is abundantly distinct from *D. sericea* Nutt., to which it is allied. In that species the sheaths are densely villous, and the marginal hairs of the appressed-pubescent flowering scales are about 3 mm. long, instead of 2 mm. as in *D. glabra*.

An apparently undescribed Species of Prunus from Connecticut.

By John K. Small.

(Plate 292.)

To venture to describe a new species of *Prunus* from the long explored territory of the State of Connecticut may seem to some to be questionable, but so clear a case has recently come to my notice that to do otherwise would be unjust to nature.

The plant in question is a low slender branching shrub, reaching a maximum height of about twelve decimeters. The main stem is clothed with a dark rough bark and, like the principal branches, is leafless, the ascending twigs and branchlets only producing leaves. The small white flowers are confined to the branchlets just below the leaf-producing parts. The small globose drupe is deep purple or almost black, covered with an abundant light blue bloom. To the taste the fruit is bitter and astringent.

The species occurs on a cross-shaped area, on a low gravelly ridge near Long Island Sound, at Groton, Connecticut, and is related to *Prunus maritima*, which grows in the immediate neighborhood and under precisely the same conditions, thus affording an excellent opportunity for a comparison of characters:

1. The new species is lower, more slender and delicate in habit than *Prunus maritima*, maturing both its leaves and fruit earlier in the season.

2. The small suborbicular type of leaf, as against the larger elongated type characteristic of the beach plum. This character is very apparent from the time the buds begin to unfold.

3. The smaller flowers with the suborbicular petals, which are about 5 mm. in diameter and abruptly narrowed at the base, as compared with the larger broadly obovate petals of *Prunus maritima*, which are gradually narrowed at the base.

4. The smaller always globose short-pedicelled drupe, in place of the longer often elongated and long-pedicelled fruit of the beach plum.

5. A small and very turgid stone (nearly as thick as broad), which is pointed only at the base. The stone of *Prunus maritima* is flatter and usually pointed at both ends.

6. Sprouts arising from the ground never produce flowers, as they frequently do in the case of *Prunus maritima*.

This plum was discovered by Dr. Charles B. Graves, of New London, Connecticut, to whom I am indebted for specimens and much of the substance of this paper, and whose name I wish to associate with the plant as

PRUNUS GRAVESII n. sp.

A low, unarmed shrub; stems erect or ascending, reaching a maximum height of 12 dm., much branched, clothed with a dark rough bark, leafless like the ascending branches; twigs and branchlets less leafy, usually puberulent; leaves orbicular or oval-orbicular, varying towards orbicular-obovate, 2–4 cm. long, rounded or retuse and apiculate at the apex, sharply serrate or those of the shoots crenate-serrate, abruptly narrowed, rounded or truncate at the base, sparingly pubescent or glabrate above, more pubescent beneath, especially on the nerves; flowers pure white, 1–3 cm. broad, solitary or 2–3 together, scattered on the twigs near the top of the shrub; pedicels stiff, stout, 6–10 mm. long, pubescent; calyx pubescent like the pedicels, the tube campanulate, the segments oblong, as long as the tube; petals sub-orbicular, about 5 mm. in diameter, abruptly narrowed at the base; drupe globose, solitary, 10–15 mm. in diameter, usually 12.5–13 mm. in diameter, deep purple or almost black with an abundant light blue bloom, bitter and slightly astringent; stone broadly oval, broadly crested, 7.5–9 mm. long, 7–8 mm. broad and 6–6.5 mm. thick, very turgid on one side, acute at the base, rounded at the apex.

In the year 1895 the species flowered during the last week of May and matured its fruit the first week of September.

A new Polygonum from Bolivia.

By John K. Small.

(Plate 293.)

Polygonum fallax n. sp.

Annual or perennial by a long somewhat spiral root, low, dull green. Stem more or less densely and caespitosely branched near the top of the root, the branches spreading or prostrate and ascending, 2–12 cm. long, very leafy except at the base; leaves varying from ovate-oblong to obovate-oblong, 3–5 mm. long, obtuse, somewhat revolute and crisped, narrowed at the base, wrinkled above, slightly nerved beneath, the mid-nerve keeled beneath, especially near the base, obliquely articulated at the base of the ocreae; ocreae funnelform, 4 mm. long, imbricated, especially toward the ends of the branches, at length lacerate to a little below the middle; flowers numerous and often crowded; calyx 2.5 mm. long, 5-parted, 4 segments green, with whitish margins, 1 wholly included and hyaline, all rounded at the apex, stamens usually 5 or 6; filaments dilated their whole length into a broadly ovate hyaline petal-like organ; style two-parted, .4 mm. long; achene lenticular, ovoid, 2.5 mm. long, reddish, nearly smooth, shining, its faces convex, its angles rounded, sometimes faintly margined.

A species of especial interest collected in Bolivia by Mr. Bang and communicated to me by Dr. Rusby. Although it belongs to the subgenus *Avicularia*, its fruit possesses characters heretofore unknown in that subgenus. The several natural groups of *Polygonum* bear two kinds of achenes, some lenticular, others triquetrous, while in a few cases both forms appear. *Avicularia* has been known to produce only the triquetrous achenes developed from a three-angled ovary with a more or less three-branched style, but in *Polygonum fallax* we are confronted with a species of subgenus *Avicularia* bearing only lenticular achenes developed from lenticular ovaries with two-branched styles.

A second peculiarity is exhibited in the pericarp which most closely resembles that of the different members of the subgenus *Duravia*, both in texture and color, but the styles are not those of that group. Another interesting point is found in the androecium; the filaments are dilated into broad petal-like organs, which form a cup around the ovary. I know no other case like this in the

genus. Notwithstanding these exceptions, the species for the present must be referred to *Avicularia* and forms the first exception to its normal morphology as far as I have observed, and an interesting one.

Explanation of Plate 293.

1. Whole plant, natural size.
2. Leaf, enlarged.
3. Flower, enlarged.
4. A stamen, enlarged.
5. Achene, enlarged.
6. Cross-section of achene, enlarged.

The Relation between the Genera Thysanella and Polygenella as shown by a hitherto unobserved Character.

By John K. Small.

The genus *Thysanella* has generally, and apparently without good reason, been included in *Polygonum*.

In a former paper * I stated that *Thysanella* was a perfectly distinct genus, related to *Polygonella* and not to *Polygonum*.

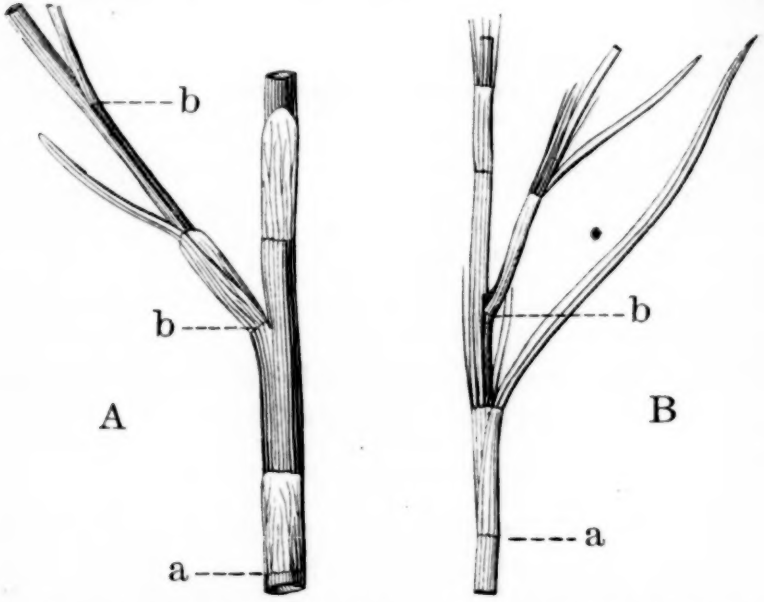
A glance at *Thysanella fimbriata* and any member of the genus *Polygonella* ought to be sufficient to convince any one of the strong relationship between the two genera. The habits of the two are almost identical, while the vegetative organs of *Thysanella* much more closely resemble those of *Polygonella* than they do any member of *Polygonum*.

Coming to special morphological characters let us first consider the flower. Here we find the special development in the inner series of sepals; likewise in *Polygonella* it is the inner sepals that develop special organs. In *Polygonum* the outer sepals are specialized if any development at all takes place, the inner series being practically unmodified.

Besides the foregoing considerations I have lately noticed a character in both the genera *Thysanella* and *Polygonella* which is possessed by no other member of the family *Polygonaceae*. In the

* Mem. Dept. Bot. Col. Coll. 1: 9.

one species of *Thysanella* and in all the species of *Polygonella* the branching is not nodal, but internodal.



The internodal branching is brought about by the adnation of a secondary axis to a primary axis for a greater or less distance above a secondary node, usually about one-half the distance from node to node. The true condition is more plainly shown in *Thysanella*, where the union of the two axes is not as complete as in *Polygonella*, a shallow but usually distinct groove showing the place of union.

Explanation of the Figure.

A. *Polygonella Americana* (F. & M.) Small.
B. *Thysanella fimbriata* (Ell.) A. Gray.
a. Nodes.
b. Point where the adnate axis diverges.

A Plant Catapult.

In the process of enlarging the College seed collection a quart or so of the pods of the Chinese Wistaria were recently brought into the laboratory for their seeds. Some of the pods, that might

be easily mistaken for the fingers of a soiled buckskin mitten, were placed upon a radiator to dry while others were deposited upon a table near by. Some were hung in my son's sleeping room to note the effect upon a young person unversed in the methods of plant dissemination. Upon the third day the pods upon the laboratory radiator began their bombardment. The first shot provoked surprised in a person in a adjoining room, the report being in volume not unlike that made by a Fourth of July toy pistol. In a few minutes the first shot was followed by a second and the pieces of the horny pod were seen to rise for several inches, while the large seeds hit the high ceiling with considerable force. A third pod was taken to the middle of the room and watched for an explosion. Within five minutes the efforts were rewarded by first a low snap, followed quickly by a high somersault of the pod and the expulsion of the seeds to a vertical and lateral distance of ten feet. Of the four seeds only two were recovered, the others being lost among papers and books not far away. In another instance the seed was flung from a pod with such force as to strike the window, producing a sharp sound as if a small stone had been thrown against the pane. If the window had been open the seed would have reached the side of a neighboring building fifteen feet away.

It is an easy matter to cause the dry Wistaria pods to explode by holding by the stem end and bringing them down with a sharp tap upon one of the two edges. The pods open uniformly by the ventral suture, and if the pod is struck by this edge the seeds do not fly out so readily, but by reversing the edges they are flung upward, and may rise to the height of many feet.

One of the pods "popped" in my boy's room just as the lad was awaking in the morning, and drew from him the remark that he was "scared awful." He also said that "if those things were made to hold seeds they were not of much use."

These statements are repeated here to enforce the fact that the noise made by the Wistaria seed-pods may be positively alarming in the quiet of the early dawn to an unsuspecting child. Older persons, still earlier in the morning, might experience a surprise should one of these spring traps fly open with its attendant sharp cracking sound.

The pods average from four to six inches long, bearing two, three and four seeds, which are flat upon one side and convex upon the other and a half-inch in diameter. The wall of the pod is quite thick and develops in drying a remarkable degree of tension. Other members of the Leguminosae are noted for their casting of the seeds; but the undersigned has observed nothing that will compare in volume of sound or of projection distance with the Wistaria. BYRON D. HALSTED.

DECEMBER 9, 1896.

Notes upon Maine Plants.

BY F. L. HARVEY.

The following Maine plants were detected during the past season. Several are not recorded in Fernald's Catalogue or Supplement. Some are added for locality.

Anemone cylindrica Gray. Pastures, E. Auburn, Me., une, 1896. E. D. Merrill.

Cardamine Pennsylvanica Muhl. Rocky hillsides at the base of a shaded cliff. Abundant. Growing as though native, E. Auburn, June to Oct., 1896. E. D. Merrill.

Silene nivea Otth. Bank of the Stillwater River near Orono, Me., on a north hillside. The patch was nearly a rod square. July, 1896. F. L. Harvey.

Koellia flexuosa (Walt.) MacM. (*Pycnanthemum linifolium* Pursh). Field, Brownfield, Me., August, 1896. E. D. Merrill.

Stachys palustris L. This was excluded from the Maine Flora by Mr. Fernald, as no station was known. Growing abundantly on the islands of Penobscot Bay. Two Bush Island, F. L. Harvey; Pond Island, O. W. Knight, August, 1896.

Polygonum lapathifolium nodosum (Pers.) Small. Waste places, E. Auburn, E. D. Merrill. We also found this at Jackman last season.

Polygonum littorale Link. Waste places, Orono, Me., 1896. O. W. Knight.

Galinsoga parviflora Cav. A single robust specimen growing near a garden in E. Auburn. E. D. Merrill.

Senecio viscosus L. Quite abundant on Western Sister Island, near Mt. Desert, Long Island, Penobscot Bay, August, 1896. F. L. Harvey. Growing with *Solanum nigrum.*

Panicum agrostidiforme Lam. (*Panicum agrostoides* Muhl.). Along roadsides, Brownfield, Me., August, 1896. For locality. E. D. Merrill.

Panicum lanuginosum Ell. A form with long soft hairs was referred to Prof. Scribner, who named it as above doubtfully. Our Panicums need careful study. E. Auburn, July, 1896. E. D. Merrill.

Lolium temulentum L. A few specimens found near the Stillwater river, Orono, Me., July, 1896. F. L. Harvey. Probably introduced.

Agrostis Novae-Angliae Tuck. Low ground. Grasslands, E. Auburn, July, 1896. E. D. Merrill.

An undescribed Species of Gilia.

GILIA LAXIFLORA (Coulter).

Gilia Macombii laxiflora Coulter, Cont. U. S. Nat. Herb. 1: 44. 1890.

This *Gilia* is undoubtedly worthy of specific rank, and its relationship seems to be with *Gilia longiflora* Don, rather than with the species of which it was made a variety. It may be characterized as follows:

Annual, about 3 dm. high, erect, branching, glabrous except the calyx, pedicels and growing stem, which are minutely glandular; leaves pinnate with slender divisions, mucronate-tipped, the upper few-lobed or entire; inflorescence scattering, with flowers on slender pedicels 1–2 cm. long, the corolla white or bluish tinted, slender, 10–15 mm., the lobes ovate, pointed, 4–5 mm. long, the filaments included, unequally inserted; tube of the calyx 5 mm. long, with subulate teeth 1½–2 mm. long; capsule 10 mm. long, having 6 seeds in each cell, which develop mucilaginous threads when wetted.

It is found on the plains about New Windsor, Colo., and has quite an extensive range. It blossoms from June to September. The flowers are smaller and are not showy as are those of *Gilia longiflora.* I intended to describe this *Gilia* under another name, but Mr. P. A. Rydberg compared it with type specimens in the

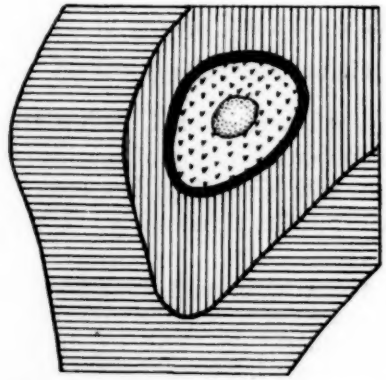
Harvard herbarium and identified it with *Gilia Macombi* var. *laxiflora* Coulter. To Mr. Rydberg I am also indebted for the citation of former collections: *Colorado:* James (Long expedition), Dr. G. W. Hulse, 1870, O. A. Farwell, no. 1068; *Texas:* Bigelow (Whipple expedition), 1853, Reverchon, 1882, G. C. Neally, 1889; *Southeastern Utah:* Alice Eastwood, no. 77, 1895.

GEO. E. OSTERHOUT.

NEW WINDSOR, COLORADO.

Botanical Notes.

On the Formation of Circular Muskeag in Tamarack Swamps—A Correction. In Professor MacMillan's paper published in the December Bulletin, 1896, the description of the figure printed on page 502 was accidently reversed; it should read as follows:


Central *Sphagnum* and *Utricularia.*
Zone of *Ledum* and *Eriophorum.*
Zone of *Picea Mariana.*
Zone of *Larix laricina.*
Ridges with *Pinus divaricata.*

It is requested that this correction be indicated at the place noted. [ED.]

Cymbalaria Cymbalaria (*L.*) *Wetts. in eastern Pennsylvania.* For some years I have observed and collected the above-named plant at several places along roadsides between Lancaster and Safe Harbor. During the past summer I found it established in the extreme southern part of Lancaster County, near Pleasant Grove. J. K. SMALL.

CRATAEGUS VAILIAE n. sp. A shrub, 3°–6° high, the branches stout, light gray; thorns about 1′ long; leaves oval, 1′–3′ long, short-petioled, pubescent on both sides, but becoming glabrate and slightly shining above, acute at both ends, or some of them obtuse at the apex, sharply serrate nearly all around, sometimes slightly 3-lobed, those of young shoots sometimes nearly orbicular, the petioles sparingly glandular, or glandless; stipules narrow, very glandular; corymbs 2–6-flowered; pedicels and calyx densely pubescent; calyx-lobes lanceolate, 4″–6″ long, deeply incised, glandular, nearly as long as the petals, reflexed in fruit; pome globose, yellowish green, 4″–5″ in diameter.

Collected by Miss Anna Murray Vail, on the bank of the Roanoke River, Roanoke, Va., May, 1890, and by Dr. John K. Small, at the Falls of the Yadkin River, N. C., August, 1892. It is nearest to *C. uniflora* Muench. N. L. BRITTON.

Proceedings of the Club.

ANNUAL MEETING, TUESDAY EVENING, JANUARY 12, 1897.

The President occupied the chair and there were 33 persons present.

The following persons were elected active members: Miss Edith K. Joyce, Mr. A. J. Grout, Mr. W. N. Clute, Mr. M. A. Howe, Dr. H. N. Richards, Dr. H. B. Ferguson.

The following were elected corresponding members: Mr. E. M. Holmes, Curator, Museum Phar. Soc. of Great Britain; Mr. J. H. Hart, Director Royal Botanic Garden, Port of Spain, Trinidad, West Indies.

The Committee on the death of Mr. Rudkin presented the following report:

Resolved, That in the death, on the 13th of November, last, of Mr. William H. Rudkin, one of the early members of the Torrey Botanical Club, we have lost a most valued friend, a long and

faithful member, officer and coadjutor, and an endeared companion in all the work, the excursions, and the enjoyments of our organization.

ADDISON BROWN,
N. L. BRITTON,
HENRY OGDEN,
Committee.

It was unanimously resolved that the report be published in the BULLETIN, and that the Secretary forward a copy thereof to Mr. Rudkin's surviving brother.

Miss Ingersoll, Curator, reported a large amount of work performed upon the herbarium during the year, and that the latter was progressing rapidly toward a very satisfactory condition. In accordance with a recommendation contained in this report, it was unanimously resolved that the Curator and the Editor be appointed a committee to prepare and print a list of the Club's desiderata for the local herbarium, and to distribute the same to the members.

The Treasurer, Mr. Ogden, reported a cash balance of $56.89 in the general fund and $514.14 in the Buchanan fund.

The Recording Secretary, Dr. Rusby, reported an average attendance of 31 persons at the 15 meetings held during the year, 2 deaths, a net gain in active membership of 28, a present active membership of 219, corresponding membership 150, honorary membership 4, scientific papers presented 37, of which 22 had been published. Several hundred new species and a number of new genera had been communicated, and there had been a marked increase in attention given to anatomical and cryptogamic subjects. It was recommended that provision be made in the new constitution and by-laws for a standing committee on scientific programme and an order of business for the annual meeting. The recommendations were approved.

The Editor reported that Vol. 23 of the BULLETIN had aggregated 548 pages and 34 full-page plates, and that two numbers of the *Memoirs*, aggregating 206 pages, had been issued. There was a cash balance from publications of $48.09 in addition to the balance already reported by the Treasurer. The Editor also presented a special report referring to the special sale of publications to secure funds for reprinting certain exhausted numbers of the BULLETIN. About $105 additional would be required, thus enabling the sale of $424 worth of BULLETIN sets. It was recommended that this

sum be appropriated from the treasury for the purpose. After discussion this recommendation was adopted. The discussion developed the fact that the BULLETIN had more than supported itself financially.

Officers for 1897 were elected as follows: President, Addison Brown; Vice-Presidents, T. F. Allen, H. H. Rusby; Treasurer, Henry Ogden; Recording Secretary, Edward S. Burgess; Corresponding Secretary, John K. Small; Editor, N. L. Britton; Associate Editors, Emily L. Gregory, Arthur Hollick, Anna M. Vail, B. D. Halsted, Lucien M. Underwood; Curator, Helen M. Ingersoll; Librarian, William E. Wheelock.

A communication was presented from the *American Naturalist*, requesting that abstracts of the proceedings of the Club be regularly furnished for publication in that journal. The request was granted.

The scientific programme of the evening was then taken up as follows:

By Mr. A. J. Grout, "Notes on some American *Brachythecia*."

By Dr. N. L. Britton, "*Linum Virginianum* and its Relatives."

Index to recent Literature relating to American Botany.

Allen, T. F. A new Species of *Nitella*, belonging to the *N. flexilis* Series, with a Review of the allied Species. Bull. Torr. Bot. Club, **23**: 533. *pl. 284.* 28 D. 1896.
N. laxa n. sp. from Japan.

Allen, T. F. New Species of *Nitella* belonging to the monoecious *acuminatae* Group, with a Review of the allied Species. Bull. Torr. Bot. Club, **23**: 534–536. *pl. 285, 286.* 28 D. 1896.
N. stellaris n. sp. from Indian Territory and *N. capitulifera* n. sp. from Japan.

Arthur J. C. Laboratory Apparatus in Vegetable Physiology. Bot. Gaz. **22**: 463–472. *pl. 24, 25.* 24 D. 1896.

Arthur, J. C. New Apparatus for Vegetable Physiology. Proc. Ind. Acad. Sci. **1894**: 62–64. O. 1895.

Atkinson, G. F. Albert Nelson Prentiss. Science (II.) **4**: 523. 9 O. 1896.

Bailey, L. H. Instructions for taking phenological Observations. Monthly Weather Review. S. 1896. [Reprint.]

Bailey, L. H. On the untechnical Terminology of the Sex-relation in Plants. Science (II.) **3**: 825–827. 5 Je. 1896.
Proposes to apply the terms of sex to asexual structures in alternating life-histories.

Bailey, L. H. The Philosophy of Species-making. Bot. Gaz. **22**: 454–462. 24 D. 1896.

Baker, J. G. The Genus *Brodiaea* and its Allies. Gardn. Chron. **20**: 213, 241, 459, 687. 1896.
Numerous figures are given.

Bastin, E. S., and **Trimble, H.** A Contribution to the Knowledge of some North American Coniferae. Am. Journ. Pharm. **68**: 199, 321, 409, 554, 642. 1896.
Numerous figures are given.

Beringer, G. M. The Leaves of *Drosera filiformis*. Am. Journ. Pharm. **68**: 675. D. 1896.

Bessey, C. E. The Botanical Seminar of the University of Nebraska. Science (II.) **4**: 822, 823. 4 D. 1896.

Bicknell, E. P. *Geum Canadense flavum* (Porter) Britton, a valid Species. Bull. Torr. Bot. Club, **23**: 523–525. 28 D. 1896.

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